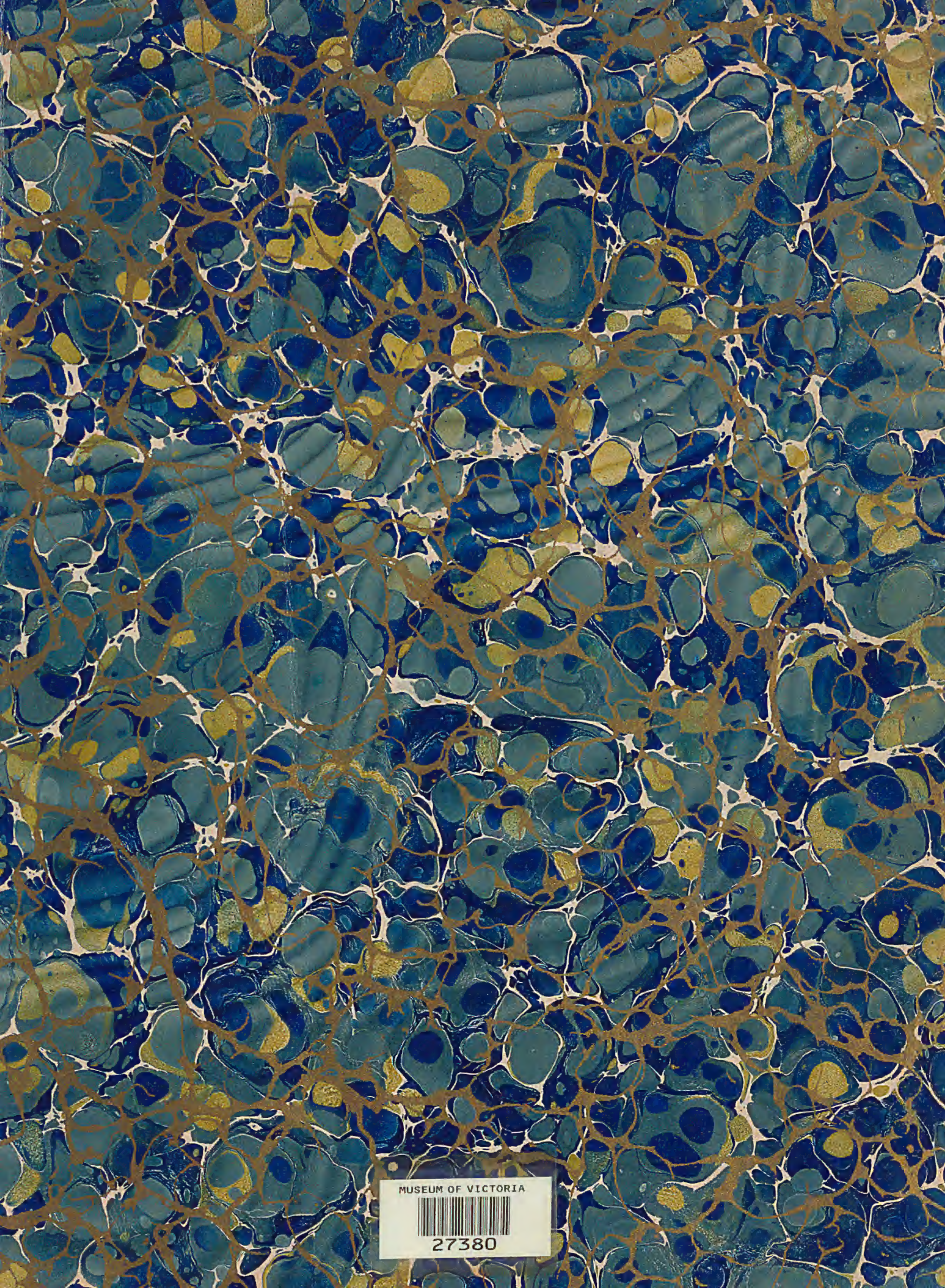
THE BUTTERFLIES OF AUSTRALIA

WATERHOUSE AND LYELL

G. L.



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A MONOGRAPH OF THE AUSTRALIAN RHOPALOCERA

Introducing a complete scheme of structural CLASSIFICATION, and giving DESCRIPTIONS and ILLUSTRATIONS of all the Butterflies found in Australia, including a number now recorded for the first time

BY

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AND
GEO. LYELL, F.E.S.

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underlined ____ = taken on the wing, or bred, by G. Lyell

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PREFACE

The present work is the first attempt to describe and illustrate the whole of the Butterflies of Australia, and to classify them according to modern scientific views. It is based upon more ample material than has ever been available before: earlier workers had to be content with solitary examples of quite a number of species, but we have been able to gather long series of the great majority. For the purposes of this work we have examined over fifteen thousand Australian butterflies in our own two collections, over six thousand in the Museum collections of Brisbane, Sydney, Melbourne, Adelaide and Perth, about the same number in private collections, and a very great number of duplicates. We have not hesitated to sacrifice examples of almost every species in our search for details of structure, and in this connection have also examined many allied Indo-Australian species with special attention to types of genera. Instead of the usual minute description of the type specimen, we have essayed the much more difficult task of drawing up a description applicable to the average butterfly of each species.

Our records of habitat and times of appearance have been as far as possible compiled from our own captures, but would not have been nearly so numerous had we not been materially assisted by many friends. To these our thanks are due, and we must specially mention H. Elgner (Cape York and Torres Straits Islands), F. P. Dodd (Kuranda, Herberton, Townsville, Darwin), G. M. Goldfinch (Ingham), E. P. Jones and W. H. Miskin (Rockhampton), Dr. T. L. Bancroft (Eidsvold), R. Illidge and Dr. A. Jefferis Turner (Brisbane), G. H. Wyld (Byron Bay), R. Young (Richmond R.), R. J. Tillyard (Dorrigo and Ebor), Dr. W. E. Drake (Wandin and Castlemaine), E. Jarvis (Wandin), D. Goudie (Birchip and Sea Lake), J. R. Hill (Kewell), R. E. Trebilcock (Geelong and Kerang), F. M. Littler (Launceston), H. H. Griffith (Mt. Wellington), O. L. Adams (Mt. Magnet), W. K. Findlay (Zeehan), S. Angel and F. M. Angel (Adelaide), F. L. Whitlock (Wilson's Inlet), G. F. Berthoud (Waroona and Geraldton), G. C. Candy (Wyndham), W. C. Roberts (Daly R.), F. C. Bleaser (Darwin), C. H. Wickham, L. Harrison, H. W. Davey, E. Anderson, F. P. Spry, Dr. E. A. D'Ombrain, and J. Searle. The localities bracketed after each name indicate the districts from which the bulk of these labelled specimens reached us. Nor must we forget Mr. O. B. Lower of Broken Hill, who has lent us his types for reference: and a recent prolonged visit to the somewhat inaccessible Claudie R. by Mr. J. A. Kershaw, which is responsible for the many records from that spot.

Until quite recently the butterflies of West Australia have been very much neglected; great difficulty has been experienced in securing specimens from that State. Thanks to the efforts of Messrs. Berthoud and Whitlock a considerable number of records have lately been obtained, and Messrs. R. E. Turner and R. Illidge have recently visited S.W. Australia and have shown us all their labelled specimens. The West Australian Museum has given us a list of the larger butterflies in the Perth collection, and sent us the smaller ones for examination, and the South Australian Museum has allowed us to examine the butterflies recently collected in N.W. Australia by Mr. W. Dodd.

We have to thank the Queensland Museum for the loan of Miskin's types, and we have had free access to the collections of the Macleay and the Australian Museums of Sydney and the National Museum of Melbourne. The collection gathered by Mr. R. E. Turner during a residence of fifteen years at Mackay is in our possession and has furnished many accurate records from North Queensland. Of our personal records, G. A. Waterhouse is responsible for the great bulk of those from N. S. Wales, and for many others gathered during several visits to Brisbane and the Cairns-Kuranda district; while G. Lyell has supplied most of those from Victoria, and others collected during many autumn visits to Sydney and trips to the Manning River and to Brisbane.

Some of the illustrations for this work were drawn for us by Mr. A. R. McCulloch; the originals of the coloured plates are from the brush of Mr. H. W. Simmonds; the drawings of larvae and pupae are by Miss J. Kong Sing: the bulk of the illustrations are from photographs taken by Mr. Henry King of Sydney, and since retouched to produce the originals for the process engraver.

We trust the book will receive a welcome from all Australian lovers of nature, and give an impetus to further investigation of the subject. It has no concern with those collections in which butterflies are regarded as mere curiosities or ornaments. It is written to advance the science of entomology, and to aid those who are forming collections for the purpose of study by themselves or by others. If it encourage the study of our Australian butterflies by creating a wider circle of observers, we shall feel amply repaid for our labours.

G. A. Waterhouse

Bull's Chambers, Moore Street, Sydney.

Geo. Lyell

Gisborne, Victoria.

May, 1914.

INTRODUCTION

The first butterflies recorded from Australia were those captured by Sir Joseph Banks at Botany Bay, Bustard Head and Endeavour River (Cooktown). These were named and described by Fabricius in 1775 and the types are still in the British Museum. In 1805, in his ''Insects of New Holland,'' Donovan gave short descriptions with coloured plates of some of these same butterflies, as well as of others obtained from Alex. Macleay, M. Francillon and William Jones of Chelsea: unfortunately several species from other countries, including two or three from Norfolk Island, were wrongly described as Australian in this work. In 1827 W. S. Macleay gave a list of the then known Australian butterflies, together with descriptions of several new ones taken by Captain King during his survey journeys along the eastern and northern coasts. The activity of France in sending scientific expeditions to the Pacific resulted in the discovery of other species: Boisduval, writing of the Astrolabe expedition in 1832, published a ''Monograph upon the Lepidoptera of the Pacific,'' which mentioned almost all the known butterflies of Australia: the illustrations published by Guerin in 1829 in connection with the voyage of the Coquille, added yet other species.

In 1864 Scott's folios of ''Australian Lepidoptera" with hand-coloured plates, began to make their appearance: they were discontinued, but in later years some further parts were published by the Australian Museum, with Olliff as editor. Kirby's Catalogue of 1871 included Australian butterflies, and a few years later (1874) Masters published his ''Catalogue of Australian Butterflies,'' listing 260 species. In 1878 Semper provided an excellent list of the 204 Australian species in the Godeffroy collection. Ploetz in his ''Monograph of the Hesperidae" in 1884 gave a number of descriptions of Australian Hesperids, but his methods were so involved that, until his unpublished drawings quite recently became available, only a few of his species could be accurately determined.

Hewitson had meanwhile been receiving butterflies from his Australian collectors and correspondents, and describing them (1846-1875) in various scientific journals; and a number captured by the Austrian expedition in the Novara were described by Felder in 1865. The British Museum had also from time to time received butterflies from Australia, and these had been described by A. G. Butler (1866-1898): this writer announced his intention of publishing an account of the butterflies of Australia, but did not carry through his proposal.

Since 1885, with but few exceptions, the description of Australian butterflies has remained entirely in Australian hands, the pioneer in this direction being W. H. Miskin who made known quite a number of new species. Olliff of the Australian Museum published "Australian Butterflies" in 1889: this was a small work of a popular character giving good illustrations of a few of the better known species. In 1891 Miskin's Synonymical Catalogue was published by the Queensland Museum, recording 248 species and giving descriptions of a few new ones. Anderson and Spry in "Victorian Butterflies" illustrated in 1893 with admirable woodcuts the 69 species then recorded from the southern State. In 1902 Meyrick and Lower published, in the Transactions of the Royal Society of South Australia, a Revision of the Australian *Hesperidae*, and this was revised and supplemented by Lower in 1911. In 1902 and 1903 the Proceedings of the Linnean Society of N. S. Wales gave a Revision of the Australian *Lycaenidae* by Waterhouse; and in 1903 a ''Catalogue of the Rhopalocera of Australia'' by the same author, and recording 329 species, was printed by the N. S. Wales Naturalists' Club. Finally in 1908 Rainbow published his ''Guide to the Study of Australian Butterflies,'' which deals chiefly with the early life stages, but also gives the author's drawings of some of the perfect insects.

The type of a species or subspecies is that particular butterfly from which the scientific description was drawn when the name was first applied. Only of late years has sufficient importance been attached to the labelling and preservation of these examples, and unfortunately many of the earlier types have been scattered and lost: some of the early authors did not even indicate which particular specimen of a series they regarded as the type. We here record the whereabouts of those types known to be still in existence, for much of the difficulty of determining species and many of the errors fallen into in describing new ones, could be avoided were the types easily available.

The Fabrician types of 1775 are still in the Banksian collection of the British Museum: of those since described by Fabricius many appear to have been lost: some of his earlier species had no types, for both Fabricius and Donovan described Australian butterflies from the coloured drawings of William Jones of Chelsea, without seeing the insects at all. The types of W. S. Macleay, with the single exception of that of *Terias herla,* have disappeared. Those of Hewitson and Butler are nearly all in the British Museum, while most of those of Felder are in the Tring Museum. Semper's types have been scattered, excepting those of his *Lycaenidae,* which are in the Druce collection. The Hesperid types of Ploetz and Mabille are dispersed through many collections, and but few of them can now be traced. With the exception of a few in the Lucas collection, the types of Miskin are in the Queensland Museum. Some of Olliff's few types have been lost, but most of them are in the Australian Museum. Our own types, with the single exception of *O. ianthis* in the Australian Museum, are all in our own collections, and Lower still retains possession of most of his types.

Our record of the geographical distribution of the Australian butterflies, and the months of their appearance on the wing, is necessarily somewhat fragmentary, since it is based almost entirely upon those specimens which have passed through our own hands, and it is only during the last ten or twelve years that we have given the gathering of these records special attention. Previous writers have done little or nothing in this connection, and the value of the few records that have been published is often discounted by some uncertainty as to the correct identification of the species mentioned. So far there have been but few collectors in Australia, and these few have almost all resided on the eastern or southern seaboard, and have largely confined their attention to that portion of our continent. Our distances are so great, our country has been so sparsely populated and our collectors have been so few, that the difficulties in the way of gathering a representative collection have only of late years been surmountable. Darwin is farther away from Melbourne than Constantinople is from London and it takes three times as long to reach there: from Sydney it takes longer to reach Wyndham than it does to reach Europe. The shallow seas prevailing along the northeastern coasts discourage settlement, and many districts between Perth and Darwin have not yet been touched by the collector. Our few city museums have been too scantily staffed to permit of much attention being given to this particular branch of natural history: these public collections are still comparatively poor and the authentic records available from them are limited.

The numbers following the localities in the list beneath each description are the numbers of the months of the year during which we have records of the butterfly having been captured. But distant points have seldom been visited except during the collecting season hence anything approaching a complete list of months of capture, or an exhaustive record of distribution, cannot be attempted until we have energetic resident collectors scattered over our island continent. We are hoping this work will serve to indicate the need and point the direction, and so induce collectors to aid us: we are carefully tabulating every verified record reaching us, and will much appreciate dated specimens for examination and return, especially those from points distant from localities given in our list.

When the geographical distribution of the butterflies of Australia comes to be carefully studied, the position of each locality recorded in this work, and the date of each capture, will be of importance. The map with the index at the end of our book gives the exact position of each locality at a glance. For convenience of index reference we have numbered our points of record, beginning with Cape York in the northeast as number 1: thence we carry the numbers through the islands of Torres Straits, down the eastern coast through Queensland, N. S. Wales, Victoria and Tasmania, along the southern shores through South Australia and West Australia, and around the continent through the Northern Territory to Cape York again. The small inset maps give fuller detail of those areas within which some attempt at systematic collecting has been made: some of these extra localities are unnumbered, as their index reference to the inset map is sufficient.

The limits of Australia are clearly defined except at one point, where the islands of Torres Straits form a series of natural steppingstones to New Guinea. There is no deep-water channel here to form a natural boundary, and the geological formation of the islands (see Transactions Irish Academy, XXX, Part XI, 1894) is Australian rather than Papuan. Therefore we have adopted the political boundary of Queensland, which includes Darnley Is., Banks Is., and Murray Is. No other could have been used here unless the coastline of the continent itself were taken, and that would exclude such essentially Australian islands as Thursday Is., and Prince of Wales Is.

The great majority of Australian butterflies are to be found within fifty miles of the coast, and only a very small percentage of the species occur in the far interior: consequently the great bulk of our mainland records are from points not far from the coastline. Most of the localities named may be considered as including the surrounding country within a fifteen-mile radius: when two points are less than that distance apart it may be assumed that either altitude or geological formation is different.

Geographical variation is more dependent upon geological and climatic conditions than upon distance. An altitude of a thousand feet, or a sudden transition from scrub to forest country, may result in a greater change in the appearance of the local butterflies than a distance of five hundred miles. Yet the varying altitudes of a single belt of scrub country do not appear to affect the local butterflies to any great extent: this is well illustrated in the Cairns-Kuranda district: most of the scrub species taken at Cairns close to sealevel also occur at Kuranda (1000ft.) and many of them at Herberton (3000ft.). The forest country approaches Kuranda from some points very closely indeed, consequently there is a sprinkling of forest species in Kuranda that are not taken at Cairns: and species attached to the mangrove swamps which occur near Cairns are absent from Kuranda. The number of species to be taken during the winter months is much greater in Cairns than in Kuranda, on account no doubt of the smaller variation of temperatures near the coast. The character of the ruling vegetation evidently affects the butterflies much more than does the latitude. Many of the butterflies of the east coast occur also in West Australia: in most cases they are modified, but can easily be recognised as geographical races, but in some few species such as *X. klugi* and *C. cyprotus* we can detect no points of difference.

Now that most of the butterflies from the lands and the larger islands of the Indo-Australian Region are known and described, the complete adoption of the trinomial system of nomenclature for the Australian butterflies need no longer be delayed. The advantages of this system are self-evident: it indicates at a glance the relationship with other races from beyond Australian limits, and it provides easily available data for the study of geographical distribution.

In the past our Australian lists have been built upon a hybrid system of binomial nomenclature in which collective and racial names have been indiscriminately used. In the genus *Papilio* for instance, four of our butterflies have been known as *ulysses, sarpedon, parmatus,* and *egipius*: the first two of these are collective names and the last two racial names. If we use *ulysses* and *sarpedon* and wish to be consistent, we must change *parmatus* to *aristeus* and *egipius* to *ambrax*: or if we prefer the racial names then *ulysses* must give place to *joesa* and *sarpedon* to *choredon*: either the one or the other method should be adopted, the present mixture is altogether inadmissible. The use of the trinomial system clears up such a difficulty at once, and shows *choredon* to be the Australian race of *sarpedon, joesa* of *ulysses, parmatus* of *aristeus* and *egipius* of *ambrax.*

For stability of nomenclature it is obviously necessary that the name given to the first described race of a species be adopted as the collective name of that species: but it should be clearly understood that the other races of the species are not derived from this firstnamed race but are of equal value with it: it is not the parent race, but only one of a number of allied geographical races. A local illustration should make this contention clear. The black and green *Troides* certainly originated in New Guinea, and, spreading to the west, the south and the east, developed many geographical races. The first of these races to be named was *T. priamus* from Amboina: *priamus* therefore becomes the collective name of the species, though in itself of only equal value with *euphorion* from Cairns or the widely different *croesus* from Batchian. The race inhabiting Amboina is called *T. priamus priamus*, and the race from Cairns *T. priamus euphorion*, and thus their relationship to a common ancestor is at once declared. The four races developed in Australia are much too nearly alike to be considered distinct species, yet too divergent to be grouped under the one name: but *T. priamus poseidon*, *T. priamus pronomus*, *T. priamus euphorion* and *T. priamus richmondius* indicate clearly that they are all races of the one species, and also indicate their relationship with other races found beyond Australian limits.

In insular races a specimen is occasionally to be found agreeing more closely with the nearest contiguous race than with that upon its own island: such examples are more frequent in a continental area where continuous land connection provides an easier means of intercommunication. Hence geographical races cannot be so limited as to include a particular form, without making allowance for variation and for the inclusion of individual specimens resembling contiguous races: or to put it in other words, a geographical race cannot exclude any examples of the collective species found within its area.

In order to form true opinions regarding the development of geographical races within Australian limits, long series of accurately labelled specimens are absolutely essential: these our cabinets have in most instances provided. We have carefully studied our specimens in relation to their localities, and where the great majority of a long series from one district show definite points distinctive from those of other areas, we have considered that group of specimens to represent a race worthy of a subspecific name. But there are still some species of which the known Australian examples are too few to permit of a reliable opinion being formed: in some of these cases subspecies appear to be indicated, but we have not named them: we are opposed to the policy of founding new sub-species on scanty material, believing it preferable that a race should continue undetermined rather than the racial characters should be wrongly described, or a new race erected on insufficient grounds.

In dealing with wide-ranging species belonging to groups that are not yet well known, it is possible we may have overlooked some earlier name than that we have used for the collective species: we feel sure however that any such errors are few and far between, and we are confident we have sufficiently indicated the Australian form to enable future monographers, working out these little known groups, to correctly place the Australian race, whenever we have not already done so.

CLASS INSECTA

Butterflies and moths are popular terms applied to a division of the invertebrates of the animal kingdom known to scientists as LEPIDOPTERA, or insects-having-wings-clothed-with-scales. With other orders of insects they form the class INSECTA, or animals in which the three sections of head thorax and abdomen are distinctly indicated.

Insects are divided into two groups by the structure of their mouth parts, which are developed for biting as in the beetles or for sucking as in the moths: these groups are known as the Mandibulata and the Haustellata. Another division is made according to the structure of the wings of the perfect insects: thus we have the *Lepidoptera* or scale-winged, the *Diptera* or two-winged (flies), the *Hymenoptera* or membrane-winged (bees, wasps and ants), the *Coleoptera* or sheath-winged (beetles), the *Orthoptera* or straight-winged (grasshoppers), the *Neuroptera* or nerve-winged (dragonflies), and the *Hemiptera* or half-winged (plant bugs).

Though far from being the lowest of the Orders of the Insecta, the Lepidoptera has not reached that stage of development manifested by the Hymenoptera in the care and attention devoted to the offspring.

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ORDER LEPIDOPTERA

The Order Lepidoptera is divided into two sections: the first is called the Rhopalocera or club-horned, and is that section with which this book is concerned: the second is called the Heterocera or insects-with-other-shaped-antennae; this is a somewhat imperfect definition of the moths, for there is in Australia one small family of true moths, the *Castnidae,* with broadly-clubbed antennae.

When at rest the wings of the butterfly are usually held erect above the back with the upper surfaces pressed closely together: exceptional forms such as *Netrocoryne, Chaetocneme, Exometoeca* and *Euschemon* rest with the wings expanded in one plane. The wings of the resting moth are folded flat on the back, or raised in a tent shape above it, or are pressed closely against the resting surface. Before pupating the moth larva usually constructs some kind of silken cocoon as a shelter, and this is very rarely done by the butterfly larva. The great majority of the moths fly in the evening after sunset, while the great majority of the butterflies (*Melanitis, Liphyra* and *Phoenicops* fly at dusk) are on the wing during daylight only and are great lovers of sunshine. Most moths are furnished with a frenulum (bristle hairs clasping the hindwing to the forewing): with the exception of the Australian *Euschemon rafflesia* and one African species, this character is absent in all the butterflies, its place being taken by a chitinous clasp.

SUBORDER RHOPALOCERA

In common with most insects, butterflies undergo a series of transformations. Their life is divided into four stages: the ovum or egg in which the insect is developed from the embryo: the larva or caterpillar in which it feeds and grows: the pupa or chrysalis in which it matures: and the imago or perfect insect which alone is capable of flight and reproduction.

The OVA are of many shapes and colours: they are spherical and flattened at the base, or spherical and flattened at the apex, or conical, or dome shaped, or cylindrical, or (in some of the *Pieridae*) like a soda water bottle with a long neck. The surface is rarely smooth, is often longitudinally as well as vertically ribbed, is sometimes minutely or strongly pitted, and occasionally roughly granular. They are often deposited singly, but sometimes in small groups, and usually upon the under-surface of a leaf of the foodplant.

The LARVAE are of many shapes though usually roughly cylindrical: some of them are furnished with curious fleshy or hairy appendages the uses of which are not apparent. Our plate of the early life stages illustrates some of the many forms: **L1** and **L19** represent the smooth larvae of the

Danainae with their long fleshy tentacles: **L75** and **L90** are the usual forms of Satyrid larvae with bifid tail: **L41** is a figure of the curious horned head of the larva of *Eulepis sempronius* the one Australian species of the section of the *Nymphalinae* with smooth and rounded larvae: **L36** with small hairy processes is a representative of the other section of the *Nymphalinae*: **L6** with its slender hairy processes is the larva of *Acraea*: **L285** and **L428** represent the flattened sluglike larvae of the *Lycaenidae*: **L557** and **L562** are the two usual forms of the larvae of the *Papilionidae*: **L500** is a larva of the *Pieridae*: **L610** and **L723** are larvae of the *Hesperidae*. The butterflies from the smooth larvae of the *Danainae* have vein 1a of the forewing forked at base, while this vein is not forked in the *Acraeinae* with its curious hairy larva. The larval colours usually blend with those of the foodplant, but in some species are strikingly distinct with spots and stripes of sharply contrasting colours. The larvae of some species are solitary, many are found a few only upon each foodplant, but some feed and shelter in large companies: they nearly all shelter during daylight and feed only after dark. The larvae of the *Lycaenidae* almost invariably have a dorsal sugar-gland and are in consequence attended and cared for by ants. The larvae of the *Hesperidae* are always smooth and cylindrical, are nearly always some shade of green, and shelter within a curled leaf or a tube of grass blades.

The PUPAE are very variable both in shape and colour: our plate illustrates some of the many forms: **P1** represents the smooth and rounded pupa of the *Danainae*, and **P75** the somewhat similar pupa of the *Satyrinae*: **P90** is the pupa of *Heteronympha merope* which, with others of the genus, once no doubt suspended itself by the tail, but no longer does so; it pupates under grass or dead leaves upon or sometimes just beneath the surface of the ground: **P6** is the pupa of the *Acraeinae*, and **P36** an angulate pupa of the *Nymphalinae*: **P338, P428** and **P451** are three Lycaenid pupae; these are usually smooth and rounded, but sometimes as in **P338** flattened, and sometimes rugged: **P500** and **P521** represent two forms of Pierid pupae, one with dorsal spikes and one with a prominent anterior projection: in others of the *Pieridae* the pupae are smooth with the wing-cases extended to form a projection like a keel: **P557** and **P562** are two forms of Papilionid pupae, the one with a single medial anterior horn and a smooth surface, and the other with a lateral anterior horn on each side of the head and a rough surface: **P633, P723** and **P731** are pupae of the *Hesperidae*. The pupae of the *Pieridae*, the *Papilionidae* and the *Lycaenidae* are not only fastened by the tail but also by a central silken girdle, and are placed horizontally or vertically with the head upwards. The pupae of the *Papilionidae* with two lateral horns produce butterflies with vein 11 of the forewing free from vein 12, while the butterflies from those pupae with a single medial horn have those two veins anastomosed. The pupae of the *Hesperidae* are all more or less cylindrical and smooth: they pupate within a sheath made by curling a leaf, or by drawing together several grass blades of the foodplant: they usually pupate with the head upwards, but in some species with the head downwards: **P610** illustrates the horny anterior end of an Hesperid pupa: this is characteristic of the family, is in most cases specifically distinct, and will in the future prove an important structure for the purposes of classification.

The IMAGINES or perfect insects present a wonderful variety of shape, size, pattern and colour, and we have illustrated and described all those species yet found within Australian limits.

Much has been written about the anatomical structure of the butterfly and its various organs, so we need not devote space to this aspect of the subject: we give a few notes only, chiefly upon characters used in classification.

The WINGS are formed of a double membrane strengthened by a framework of hollow veins, and clothed with overlapping scales each attached to the membrane by a stalk. These scales give the colours to the wing, and are of different shapes in different species: among them are specialised scales some of which have internal tubes capable of carrying a liquid or scent from glands in the membrane: groupings of these scales form the sex-brands of the male and may well be organs of recognition.

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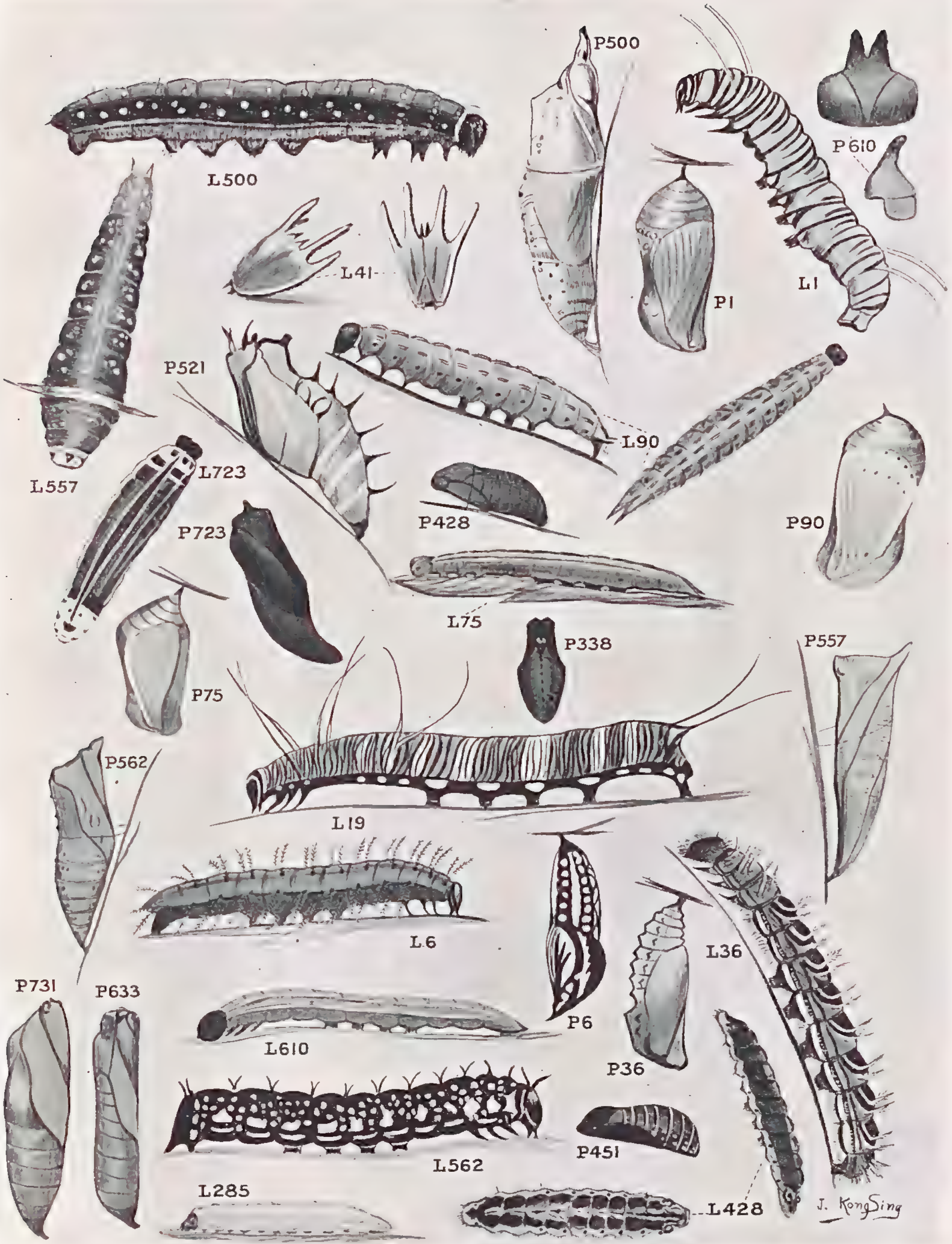
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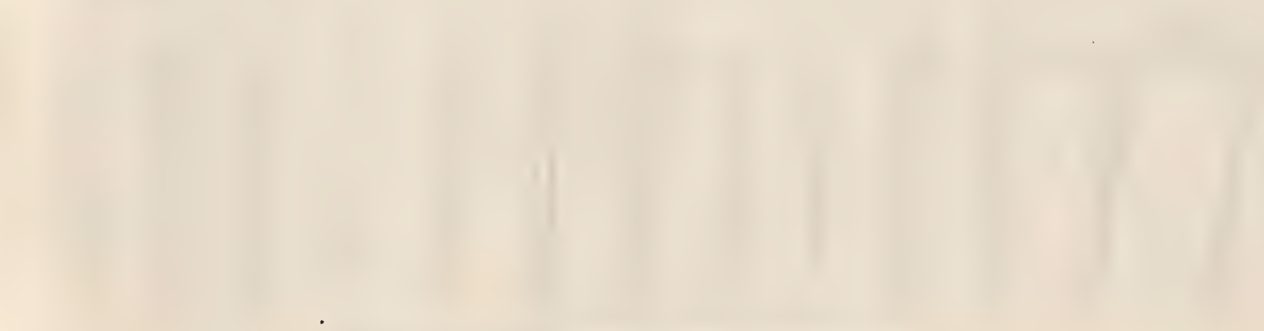

The LEGS are comparatively weak and little used except while resting and the front pair is in some groups aborted: the imperfect development varies in different groups but it is always greater in the male than in the female. In the *Nymphalidae* the front leg of the male has but one tarsal joint and is quite useless for walking. The most imperfect legs are found in those butterflies whose pupae suspend themselves by the tail only. The femur and the tibia of the leg are sometimes fringed with long hairs and this character is used for generic definition in the *Hesperidae*.

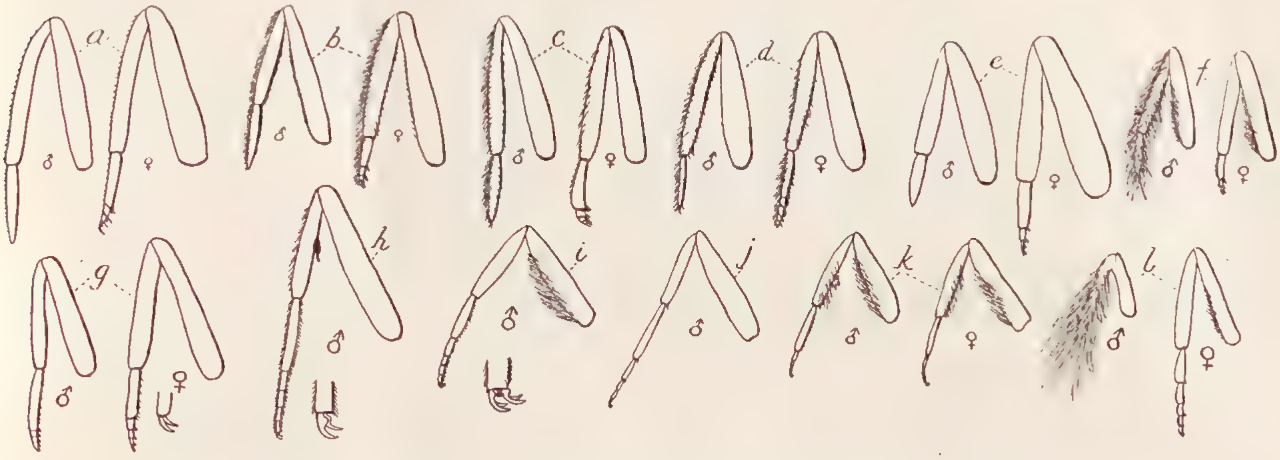

Fig. A. Front legs of butterflies (enlarged).

a. *Danainae (Danaida).* b. *Satyrinae (Heteronympha).* c. *Nymphalinae (Cynthia).* d. *Nymphalinae (Hypolimnas).* e. *Acraeinae (Acraea).* f. *Nemeobinae (Holodesmus).* g. *Lycaenidae (Thysonotis).* h. *Papilionidae (Papilio).* i. *Pieridae (Delias).* j. *Hesperidae (Cephrenes).* k. *Hesperidae (Toxidia).* l. *Libytheinae (Libythea).*

The ANTENNAE are the organs of hearing in the sense that they serve to intercept vibrations of sound. They are always more or less thickened at or just before their terminations. In the *Danainae* this terminal thickening is reduced to a minimum, while in some species of the *Nymphalinae* it is flattened and very conspicuous. Except in the *Hesperidae*, where it is most useful for generic definition, the form of the terminal swelling does not follow any definite general pattern in the different families.

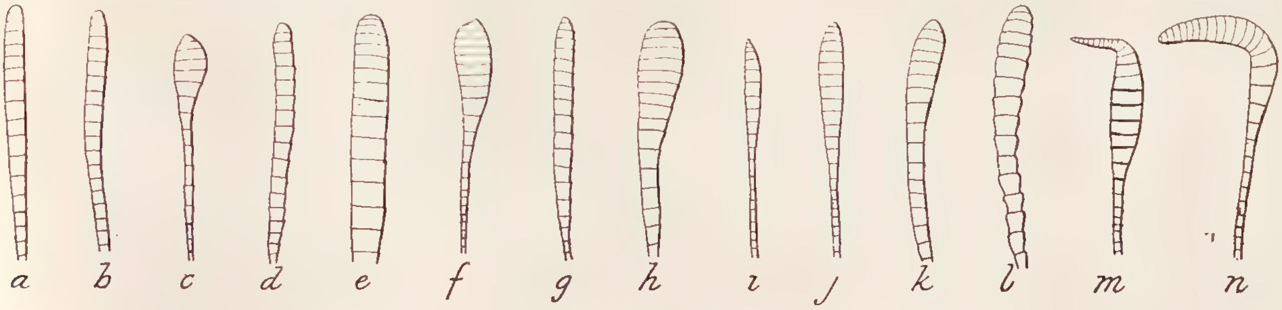

Fig. B. Terminal portions of antennae (enlarged).

a. *Danainae (Danaida).* b. *Satyrinae (Mycalesis).* c. *Satyrinae (Oreixenica).* d. *Elymniinae (Elymnias).* e. *Nymphalinae (Eulepis).* f. *Nymphalinae (Precis).* g. *Nymphalinae (Cupha).* h. *Libytheinae (Libythea).* i. *Lycaenidae (Thysonotis).* j. *Lycaenidae (Miletus).* k. *Pieridae (Delias).* l. *Papilionidae (Papilio).* m. *Hesperidae (Cephrenes).* n. *Hesperidae (Mesodina).*

The PALPI are three jointed but vary greatly in length and in density of their hairy covering: in the subfamily *Libytheinae* they attain their maximum length: they are used in discriminating that subfamily, and in defining certain genera of the *Hesperidae.*

The large compound EYES with their many facets are in some species studded with hairs: the presence or absence of these hairs provides a generic character in the *Nymphalidae* and the *Lycaenidae.*

The classification of Butterflies is based to some extent upon the characters of the early life stages, but chiefly upon those of the perfect insect. As knowledge of the earlier stages improves, many points of great importance in classification will no doubt be discovered: meanwhile the structure of the legs of the perfect insect is regarded as the character of primary importance, and next the number and the position of the veins that strengthen the wing membrane.

The system we have decided upon for naming the veins and the various areas of the wings, differs somewhat from those already in use, so needs some explanation.

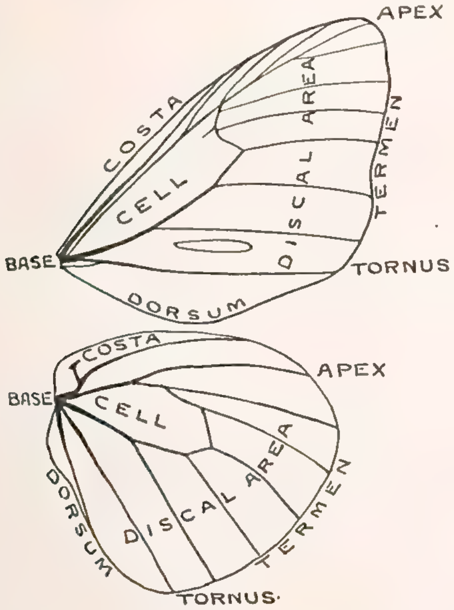

Fig. C. Wing venation of *Euploea corinna,* showing terminology of larger wing areas.

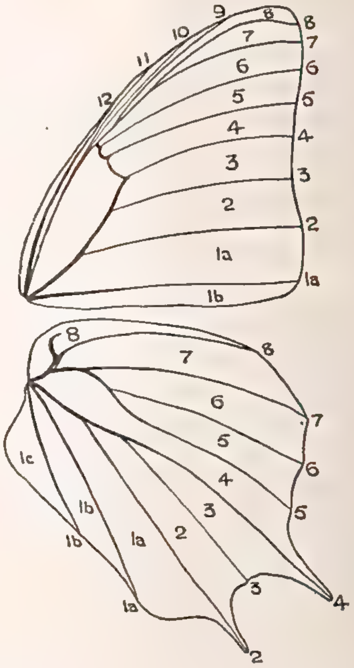

Fig. D. Wing venation of *Eulepis sempronius,* showing system of numbering veins and areas.

The forewing of a butterfly is approximately triangular. The place of attachment to the thorax is called the BASE, the front margin the COSTA, the tip the APEX, the outer margin the TERMEN, the lower angle the TORNUS and the inner or hinder margin the DORSUM: the costa extends from the base to the apex, the termen from the apex to the tornus, and the dorsum from the tornus to the base. Close to the base is the BASAL AREA; below the costa is the SUBCOSTAL AREA; the tip of the wing encloses the APICAL and the SUBAPICAL AREAS; within the termen are the TERMINAL and the SUBTERMINAL AREAS; in the basal half of the wing, between the subcostal vein and the median vein, is the CELL; between the subterminal area and the cell, reaching from the costa to the dorsum, is the DISCAL AREA.

Four main veins arise from the base of the wing and are called the SUBMEDIAN the MEDIAN the SUBCOSTAL and the COSTAL. The SUBMEDIAN we call vein 1a; of the four it is the nearest to the hindwing, and it reaches the termen just above the tornus; it is never branched, but in some groups of butterflies it is forked at the base. The MEDIAN vein forms the lower margin of the cell and has three branches, vein 2, vein 3 and vein 4, all of which reach the termen. The SUBCOSTAL vein forms the upper margin of the cell and has sometimes as many as five branches, veins 7, 8, 9, 10 and 11, but only in the *Hesperidae* do these branches arise separately; in the other families vein 8 and vein 9 (and sometimes vein 10) are fused at their bases with vein 7 from which vein they emerge some distance beyond the cell: in the *Pieridae* and in most of the *Lycaenidae*, vein 8 has advanced so far along vein 7 as to disappear altogether, and in some of the *Pieridae* and *Lycaenidae* vein 9 has been lost in the same way. The COSTAL vein is called vein 12: it is never branched, always ends on the costa, and is often fused for some part of its length with vein 11. The cell is usually closed by two or three short and weak veins called the discocellulars; these connect the end of the subcostal with the end of the median, and from them vein 5 and usually vein 6 extends to the termen. In the *Papilionidae* a short extra free vein reaches from base to dorsum, and a short cross vein near base connects vein 1a with the median vein.

The small wing areas we number according to the vein immediately below each: thus area 1a is bounded by vein 1a, a portion of the median, vein 2 and the termen: area 5 is bounded by vein 5, one of the discocellular veins, vein 6 and the termen. Where a vein has been lost the corresponding area is treated as lost: thus in most of the *Lycaenidae* the missing vein 8 causes area 7 to be bounded by vein 7, vein 9 and the costa or apex. In the *Papilionidae* with the extra short vein 1b, area 1b is between vein 1b and vein 1a, and area 1c is between vein 1b and the dorsum: in the other families with vein 1b absent, area 1b is between vein 1a and the dorsum.

The hindwing is of more irregular shape than the forewing but the terms used in describing it are the same. It has the front margin or COSTA, the outer margin or TERMEN and the inner margin or DORSUM (sometimes called the abdominal margin). The angles between these margins are the APEX at the junction of the costa and the termen, and the TORNUS or anal angle at the junction of the termen and the dorsum: the subapical, subterminal, discal and other areas are as in the forewing. In the forewing many of the veins are concentrated near the costa giving that margin of the wing a needed special strength, but in the hindwing they are more evenly distributed. The SUBMEDIAN (vein 1a) is not branched and reaches the tornus: except in the *Papilionidae*, a shorter unbranched vein rises from the base and ends on the dorsum; this we call vein 1b. The MEDIAN vein forms the lower margin of the cell and has three branches, vein 2, vein 3 and vein 4, all of which reach the termen. The SUBCOSTAL vein forms the upper margin of the cell and (unlike that of the forewing) has only two branches, vein 6 and vein 7. The cell is usually enclosed and the end of the subcostal connected with the end of the median by weak discocellular veins from which vein 5 reaches to the termen; in the *Hesperidae* this short vein is only rarely developed. The COSTAL vein is called vein 8; it is fused for a short distance from its base with the subcostal, is never branched, and reaches the costa near the apex: from near its base there often emerges a short spur called the precostal vein, and in the *Papilionidae* a short cross vein connects the precostal spur with the costal vein and encloses a small precostal cell. The small wing areas take the number of the vein immediately below each, as in the forewing.

Our plan of omitting vein 1 and numbering the submedian of both wings vein 1a, enables the corresponding veins and areas of both wings to be numbered by the same figures.

The introduction of our subject having been accomplished, we proceed to the main purpose of our book, which is the description the illustration and the classification of all the known butterflies of Australia.

The application of the following Key will place any Australian butterfly in its own particular family.

Key to the Families of the Australian Butterflies.

A. Antennae close together at base: hind tibiae with terminal pair of spurs only: forewing with one or more veins stalked with vein 7 beyond cell.
- *a*. Precostal spur of hindwing present.
  - *a^1*. Front pair of legs imperfect in both sexes.............................. *NYMPHALIDAE.*
  - *b^1*. Front pair of legs imperfect in male only.................................. *NEMEOBIDAE.*
  - *c^1*. Front pair of legs perfect in both sexes.
    - *a^2*. Precostal cell of hindwing present: vein 1b of hindwing absent....... *PAPILIONIDAE.*
    - *b^2*. Precostal cell of hindwing absent: vein 1b of hindwing present.......... *PIERIDAE.*
- *b*. Precostal spur of hindwing absent... *LYCAENIDAE.*

B. Antennae wide apart at base: hind tibiae usually with medial as well as terminal pair of spurs: forewing with all veins from base or from cell, none stalked with vein 7 beyond cell.. *HESPERIDAE.*

Family **NYMPHALIDAE.**

No measurements are given as, unless stated expressly to the contrary, the figure is always that of a butterfly of average size. As the male is usually more plentiful than the female, and as the characters used in the published descriptions are usually taken from the male, that sex alone is figured, except in cases where marked sexual differences of shape or pattern occur. Usually the male has brighter colours than the female, and the termen of the forewing is straighter in the male and more rounded in the female: when the palpi differ in length, those of the female are the longer: when the dark borders of the wings differ in breadth, those of the female are the broader.

Ovum. Variable: sometimes spherical: sometimes smooth: sometimes ribbed: often translucent.

Larva. Usually cylindrical: sometimes smooth: sometimes with short hairs: sometimes with branching spines or with frontal horns: sometimes with a bifid tail.

Pupa. Sometimes smooth and rounded: sometimes rugged and angular: sometimes with metallic colours: usually suspended by the tail: rarely loose upon the earth under grass or dead leaves.

Imago. Front pair of legs imperfect in both sexes and useless for walking: those of the male with one or two tarsal joints only: those of the female with four or five tarsal joints. Usually of moderate size: dominant colour some shade of brown: wings often ornamented with ocelli, especially beneath.

Key to the Subfamilies of *NYMPHALIDAE.*

A. Cell of both wings closed.	
a. Vein 1a of forewing forked at base	*DANAINAE.*
b. Vein 1a of forewing not forked at base.	
a^1. Hindwing without precostal cell.	
a^2. Veins not swollen at base: palpi clothed with few hairs only	*ACRAEINAE.*
b^2. Veins usually swollen at base: palpi very hairy	*SATYRINAE.*
b^1. Hindwing with precostal cell	*ELYMNIINAE.*
B. Cell of both wings usually open: if closed, discocellulars only feebly developed.	
a. Palpi small, narrow, sharp pointed	*AMATHUSIINAE.*
b. Palpi large, broad, rounded	*NYMPHALINAE.*

Subfamily **DANAINAE.**

Ovum. Much higher than wide: reticulate at apex, and thence radiating in numerous broad flattened ribs, which are crossed by distinct lines.

Larva. Smooth, cylindrical, with two or more pairs of long fleshy appendages. **(Fig. L1, L19).**

Pupa. Short, stout and smooth: often with metallic colours: suspended by the tail. **(Fig. P1).**

Imago. Usually of large size: wings broad and rounded, never tailed. Forewing with twelve veins: vein 11 sometimes anastomosed with vein 12: vein 11 from subcostal before end of cell: cell closed: vein 1a forked at base. Hindwing with cell closed. Male often with conspicuous patches of raised scales. Antennae long and slender: eyes smooth: abdomen slender.

Range. With the exception of a few species, this subfamily is confined to the tropics and subtropics: it has reached its highest development in the Indo-Australian Region, and in America is represented by only a few species.

Foodplant. *Asclepias, Aristolochia,* and other allied plants that exude a milklike juice when broken.

The habit of the larvae of this subfamily, of feeding upon various species of *Aristolochia* and allies, seems to have resulted in the transference to the butterflies of some of the distasteful properties of the foodplant. Close observation and experiment have shown the butterflies to be almost if not quite immune from the attacks of birds, to whom they are evidently most distasteful. Including even the migratory *D. archippus,* the butterflies are without exception of slow and laboured flight: the colours are distinct and striking, yet the insect upon the wing seems quite unconscious of danger.

Three genera belonging to this subfamily are found in Australia: two of these, *Danaida* and *Euploea* are, by some entomologists, divided into many subgenera.

Key to the Genera of *DANAINAE*.

A. Precostal spur of hindwing from junction of vein 7 and vein 8.
  a. Sexmark of male, if present, upon hindwing .... *Danaida.*
  b. Sexmark of male upon forewing .... *Tellerro.*
B. Precostal spur of hindwing from vein 8 .... *Euploea.*

Genus DANAIDA Latreille.

Histoire Naturelle Crustacea et Insecta, xiv, p. 108, 1805.

Antennae less than half the length of costa, with clubs long and gradual. Eyes smooth. Forewing with vein 11 from subcostal before end of cell (in some tropical species vein 11 is anastomosed with vein 12): vein 10 (in most Australian species) from vein 7 well beyond end of cell: vein 1a forked at base. Hindwing rounded, and (in all Australian species) with a prominent raised sexmark in the male between vein 1a and vein 2. (**Fig. E.**)

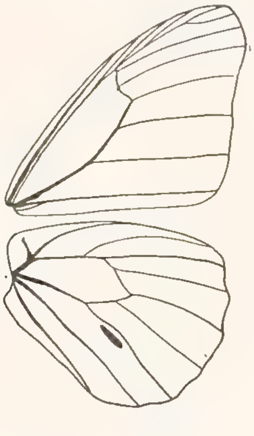

Fig. E. Wing venation of *Danaida affinis*, male.

Type. *Danaida plexippus* Linne, from India.

This genus is of special interest on account of its immunity from the attacks of birds, and from the close resemblance to it of butterflies of non-immune subfamilies. A few species only occur in America and Africa, and one only in Europe: the great majority are confined to the Indo-Australian Region.

1. Danaida archippus Fabricius. Fig. 1.

Entomologia Systematica iii, p. 49, 1793 (Central America).

♂. Above. Forewing rich tawny orange with veins black: costa, apex broadly, termen and dorsum, black: a series of postcellular spots, tawny orange, towards costa white: a series of subapical spots, tawny orange, that nearest costa white: beyond these spots, a series of obscure streaks between veins rich tawny orange: a complete series of subterminal dots, white, with an inner series of small spots, tawny orange, towards costa white. Hindwing rich tawny orange with veins lightly sealed black: termen black with two complete series of subterminal dots, white: dorsum pale yellow-brown: sexmark in area 1a, close to vein 2, black.

Beneath. Forewing as above: spots and dots larger and paler: subapical streaks between veins much larger and clearer, and dull yellow-brown. Hindwing dull yellow-brown with veins broadly black: subterminal dots larger than above, and continued along costa as a series of three irregular elongate spots.

♀. Above and Beneath as in male: veins more broadly black: sexmark absent.

Loc. Cairns 6 7 8 9 10 11. Kuranda 2 6 7. Ingham 4 5 9. Townsville 6. Mackay 4 8 9. Brisbane 1 4 6 10. Stradbroke Is. 12. Blackbutt 1. Mt. Tambourine 12. Richmond R. 3 9 10. Port Macquarie 10. Manning R. 3. Ourimbah 1 4. Sydney 1 3 4 11. Illawarra 2 4 5. Blue Mts. 4. Melbourne 4. Sea Lake. Kerang 6. Adelaide 6 7 8 9 10 11. 18♂ 17♀. Toronto 4/17. Pt Macquarie 3.4.

This species is now abundant on the eastern coast of Australia, but the absence of the foodplant in Victoria limits its appearance there to an occasional wandering example. We have adopted the name used in Seitz' Macrolepidoptera: the species has passed in Australia under many names, including *erippus*, *menippe*, and *plexippus*.

Moe V. (EGC) Jan 1916. Urunga (W) Oct [illegible] - Richmond R.I.

Richmond R. 4.9.10.11.12.

Wyndham (W H Minchin) Aug 15.5

2. **Danaida plexippus** Linne. (India).

A form of this species allied to *laratensis* from Timor Laut is taken in the northwest of Australia. A second form was recorded in error from Cairns, but the origin of the examples in question has since been traced to southern China.

2a. **D. plexippus alexis** nov. **Fig. 3.**

♂. Above. Forewing tawny orange with veins brown-black: apex very broadly, and termen, brown-black: a series of elongate subcostal postcellular dots, white: a broad band of large irregular subapical spots, white: two incomplete series of subterminal dots, white. Hindwing tawny orange with veins brown-black: termen brown-black with two incomplete series of subterminal dots, white: sexmark in area 1a, close to vein 2, brown-black.

Beneath. Forewing as above: apex brown: the outer series of subterminal dots complete, and the inner series complete from costa to vein 2. Hindwing dull yellow-brown with veins black edged grey: termen dark brown with two complete series of large subterminal dots, white: sexmark black with a central streak, grey.

♀. Above and Beneath as in male: the white spots of subapical band of forewing much smaller: sexmark absent.

Loc. Derby. Darwin 1 2. 4♂ 3♀.

3. **Danaida ferruginea** Butler. (Papua).

3a. **D. ferruginea gelanor** nov. **Fig. 7.**

♂. Above. Forewing brown with darker shadings: a band of subapical spots, white: two incomplete series of subterminal dots, white. Hindwing brown with darker shadings: two incomplete series of obscure subterminal dots, whitish: sexmark in area 1a, close to vein 2, brown-black.

Beneath as above: white subterminal dots larger and more numerous, especially upon the hindwing.

♀. Above and Beneath as in male: sexmark absent.

Loc. Darnley Is. 4. 4♂ 1♀.

This subspecies was wrongly listed in Waterhouse's Catalogue as *D. mytilene.* It does not appear to occur upon the mainland.

4. **Danaida affinis** Fabricius.

4a. **D. affinis affinis** Fabricius. **Fig. 8.**

Systema Entomologiae, p. 511, 1775.

♂. Above. Forewing brown-black: usually a streak in cell close to lower edge, white: area 1a and area 2, broadly white: a series of irregular postcellular dots, and a band of irregular subapical spots, white: two incomplete series of subterminal dots, white: often a streak in area 1a near base, tawny brown. Hindwing brown-black: central area and dorsum, white with veins brown-black: two incomplete series of subterminal dots, inner one obscure, whitish: sexmark in area 1a, close to vein 2, black.

Beneath. Forewing as above: apex pale brown: subterminal dots larger and more numerous. Hindwing as above: white central area larger, with veins black: termen tawny brown with two complete series of large subterminal dots, white: a series of eight arrow-shaped discal spots, tawny brown: basal portion of costa, of cell, and of area 1a, tawny brown: sexmark as above.

♀. Above and Beneath as in male: sexmark absent.

Loc. Cape York 4 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Claudie R. 11. Cairns 2 5 6 7. Kuranda 1 6. Ingham 4 5 9. Townsville 4 6. Mackay 1 2 3 4 5. Gympie. Brisbane. Stradbroke Is. 12. Richmond R. 1 2 3 5. Sydney 2. h Derby. Wyndham 8. Darwin 5 8 9 11 12. Melville Is. 26♂ 16♀.

Port Macquarie 16.ii.22.

5. **Danaida chrysippus** Linne. (India).

5a. **D. chrysippus petilia** Stoll. **Fig. 2.**

Supplement Cramer's Papillons Exotiques, p. 132, pl. 28, f. 3, 1790.

♂. Above. Forewing tawny yellow with cell red-brown: costa narrowly, apex very broadly, and termen broadly, black: a postcellular dot, and two costal dots at about half, white: a band of subapical spots, white: an incomplete series of subterminal dots, white. Hindwing tawny yellow: termen broadly black:

two dots upon discocellulars, black: faint traces of an incomplete series of subterminal dots, white: sexmark in area 1a, close to vein 2, black dusted grey.

Beneath. Forewing as above: apex yellow-brown: subterminal dots larger. Hindwing yellow-brown: costa and termen narrowly black, with two complete series of irregular large subterminal dots, white: three spots on discocellulars, black edged white: sexmark black centred white.

♀. Above and Beneath as in male: sexmark absent.

Loc. Cape York 3 4 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Claudie R. 11. Cairns 6 7 11. Kuranda 1 2 6 7. Ingham 4 5 9. Townsville 7. Mackay 1 2 3 4 8 10 11 12. Brisbane 1 10. Stradbroke Is. 12. Esk. Richmond R. 3 4 9. Port Macquarie 10. Manning R. 3 4. Sydney 2. Blue Mts. 4. Melbourne 2 10 11. 12 Gisborne 3 10 11. 12. Sea Lake. Dimboola 11. Zeehan. Adelaide 4 9. Balaklava 4. Perth. Waroona 2. Nannine 7. Dorre Is. 10. Fortescue R. Derby. Wyndham 4. 3. Daly R. 4. Darwin 4 5 7 8 9 11 12. Roper R Tennants Creek. 24♂ 16♀.

Widely distributed throughout Australia: in the south sporadic, but elsewhere very abundant. So far we have seen no example with a white hindwing above (*alcippus*), or with the white subapical band of forewing absent (*dorippus*).

6. **Danaida melissa** Cramer. (Java).

6a. **D. melissa hamata** Macleay. **Fig. 4.**

King's Survey Australia, ii, p. 461, n. 147, 1827.

♂. Above. Forewing black: a basal streak in cell: a spot (sometimes divided) in end of cell: two streaks in area 1a, rarely extended to a spot beyond: a spot in area 2 and another in area 3 near cell: a band of irregular discal spots: a band of subapical spots: a series of large subterminal dots: all these streaks, spots and dots, hyaline blue. Hindwing black: a streak on dorsum: a long and a short streak in area 1b: a forked streak in base of each area 1a, 2 and 3: an elongate spot in base of each area 4, 5 and 6: two streaks in cell, lower one bent upwards at termination: a series of irregular discal spots: a series of irregular large subterminal dots: all these streaks, spots and dots, hyaline blue, those nearest dorsum shading paler: sexmark in area 1a near vein 2, grey-black.

Beneath. Forewing dark brown: apex brown: spots and streaks as above. Hindwing brown: spots and streaks as above: sexmark raised like a pouch, brown.

♀. Above and Beneath as in male: sexmark absent.

Loc. Cape York 3 12. Prince of Wales Is. 5 6. Murray Is. 8 9. Darnley Is. 4 5 6. Claudie R. 12. Cairns 6 7. Kuranda. Ingham 4 5 9. Townsville 3 4. Mackay 2 3 4. Gympie. Brisbane. Blackbutt 1. Richmond R. 1 2 3. 9. 10. Sydney 4. Daly R. 4. Darwin 1 2 3 8 9 12. 21♂ 14♀.

The size and the shape of the hyaline markings are variable: the basal streaks have a tendency to coalesce and to extend to the contiguous spots, but in doing so they never cross a vein.

Genus **TELLERVO** Kirby.

Lloyd's Natural History, Butterflies, Vol. 1, p. 28, 1896.

Antennae more than half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 and vein 10 from subcostal well before end of cell: cell very long: vein 1a forked at base. Hindwing rounded.

Type. *Tellervo zoilus* Fabricius.

The genus contains a single variable species, split up into a number of easily recognised geographical races, two of which occur in Australia. Others are found in New Guinea, the Solomons, the Bismarcks, and other islands. The early stages are unknown, so the systematic position of the genus is still doubtful: it is said to be closely allied to the South American genus *Ithomia*.

7. **Tellervo zoilus** Fabricius.

In Seitz' Macrolepidoptera, Fruhstorfer wrongly lists *Hamadryas moorei* Macleay as a form of this species: *moorei* is a form of *Acca venilia* (No 56a).

7a. **T. zoilus gelo** nov.

♂. Above. Forewing black: a spot in lower end of cell, a subcostal dot above end of cell, a large postcellular spot, and a spot in area 3 near termen, white and semitransparent: a large sexmark extending from dorsum to cell, dull black. Hindwing black: a large ovoid central area, extending obscurely to dorsum, white.

Wyndham (W.H.Mutchen) Aug 1915. [illegible] 9.12.16 Melbourne Dec 1914 (FGAB) Vic Nat. Jan 1917) Toronto (WDE)

Bunbury [illegible] (AJB) [illegible]

[illegible]

[illegible] Fig. 1

[illegible]

BENEATH. Forewing black with dorsum paler: spots as above: a streak in cell, whitish: a series of small subterminal spots, white. Hindwing black: a central area, extending to dorsum, white: a spot in base of area 1a, white: a series of small costal spots, white: a series of small subterminal spots, white.

♀. ABOVE and BENEATH as in male: spot nearest costa of forewing usually larger: sexmark absent.

LOC. Cape York 4 5 10 11 12. Prince of Wales Is. 5 6 7. Banks Is. 2. 28♂ 13♀.

This the northern race differs from the next in the spots and the white central area of hindwing being much smaller.

7b. T. zoilus zoilus Fabricius. Fig. 5.

Systema Entomologiae, p. 480, 1775.

♂. ABOVE. Forewing black: a spot in lower end of cell, a subcostal dot above end of cell, a large postcellular spot, and a spot in area 3 near termen, white and semitransparent: a large sexmark extending from dorsum to cell, dull black. Hindwing black: a large ovoid central area extending obscurely to dorsum, white.

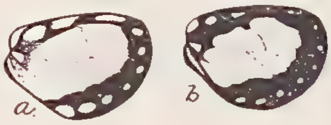

Fig. F. Hindwing beneath of a. *zoilus.* b. *gelo.*

BENEATH. Forewing black with dorsum paler: spots as above: a streak in cell, whitish: a series of subterminal spots, white. Hindwing black: a central area, extending to dorsum, white: a spot in base of area 1a, white: a series of elongate costal spots, white: a series of subterminal spots, white.

♀. ABOVE and BENEATH as in male: spot nearest costa of forewing much larger: sexmark absent.

LOC. Cooktown 10 12. Cairns 6 7 9 10 11 12. Kuranda 1 2 3 4 5 6 7 8 10 11 12. Innisfail 11. Ingham 5. 22♂ 16♀.

This the southern race differs from *gelo* in the white spots of costa of hindwing beneath being three times as long, and in the white area of hindwing, and the subterminal spots of hindwing beneath, being distinctly larger.

Genus EUPLOEA Fabricius.

Illiger's Magazine Vol. vi., p. 280, 1807: Butler, Proceedings Zoological Society London 1866, p. 268; Moore, Proceedings Zoological Society London 1883, p. 253; Miskin, Proceedings Linnean Society New South Wales 1889, p. 1037 (1890).

Antennae less than half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal before end of cell (in most Australian *Calliploea* vein 11 anastomoses with vein 12 for a short distance and then runs free to costa): vein 10 from vein 7, usually just beyond end of cell; cell long: vein 1a forked at base. Hindwing rounded. **(Fig. C and H).**

This genus is almost confined to the Indo-Australian Region. Its chief centre of distribution is probably New Guinea, where it has reached its highest development. A few species have reached the islands off the east coast of Africa, but not the mainland itself.

Through the kindness of the authorities of the Queensland Museum, we have been able to figure Miskin's types, and to carefully examine them in comparison with our own specimens. For the thorough study of the genus we have accumulated a large amount of material, and now have examples of nearly all the described species from New Guinea and the surrounding islands, as well as others from farther afield. We have handled scores of the more abundant of the Australian species, and we believe we have carefully examined every specimen of the rarer forms now in Australian collections. This we hope has enabled us to offer a fairly clear account of the genus.

It is a puzzling genus to study on account of the great similarity of many of the species, the great variability of the markings of some of them, and the very poor descriptions hitherto published.

The butterflies are all dark brown or black, with white markings. The forewing above often shows bluish or purplish reflections, the tint of which appears to remain constant in each species. The markings of all the species follow one general scheme or pattern formed of distinct series of white spots or dots, modified by absence or coalescence. A description of this pattern scheme common to the genus will save much repetition in the later specific descriptions; and as the spots and dots are always white, it will be unnecessary to repeat their colour.

General pattern scheme of the genus **Euploea.**

Above. Forewing rarely with a spot in end of cell: sometimes a series of small postcellular spots in areas 4 to 9, and sometimes a subcostal spot above end of cell in area 10: usually an outer-discal series (placed much nearer the termen than the centre of the wing) of large irregular spots, one in each area 1a to 9: these spots are of very different sizes and shapes in the different species, and sometimes those in areas 5 to 9 are so enlarged as to coalesce and form a broad subapical bar: usually a series of regular subterminal dots, two in each area 1a to 7: the sexmarks of the male, when present, always in area 1a: the dorsum usually more or less convex in the male, but straight in the female. Hindwing usually with a series of large discal spots in areas 1b to 6, those in areas 1b to 3 often partially or wholly divided, and the remainder smaller and entire: usually a series of small regular subterminal dots, two in each area 1b to 6.

Beneath. Forewing as above: usually a spot or dot in end of cell: often a narrow subcostal streak before end of cell (an inconstant character): the series of small postcellular spots sometimes beginning from area 2. Hindwing as above: usually an additional series of postcellular dots in areas 1b to 7, and an additional spot or dot in end of cell.

Several attempts have been made, with more or less success, to further divide this genus. Butler in 1866 split it up into valid sections, to which he gave names. Moore, in his Monograph of 1883, also divided it into sections, but he described as well a great number of subgenera (he called them genera). Many of these, being based on a single species, and in some cases upon a single specimen, have since proved quite untenable. The sections, we have adopted, are based upon those of Butler and Moore. and will be useful, when a Monograph of the group again comes to be written, as indicating the position and number of the Australian races.

SECTION 1. Forewing of male with dorsum straight, and sexmark absent.

This includes Moore's genera *Nipara* and *Sarobia,* neither of which has yet been recorded from Australia, though we have little doubt that one of the well known forms of *Sarobia* will yet be discovered.

SECTION 2. Forewing of male with dorsum convex, and sexmark absent.

8. **Euploea eichhorni** Staudinger. **Fig. 26, 27.**

Exotische Schmetterlinge, p. 53, pl. 26, 1885.

♂. Above. Forewing velvety black: a series of small outer-discal spots, those in areas 3, 5, 6 and 7, always present, and those in areas 2 and 4 very minute: a series of subterminal dots, usually complete. Hindwing black: a series of large discal spots, those in areas 1a, 2 and 3 partially divided: a complete series of large subterminal dots.

Beneath. Forewing brown, central area black, dorsum silky grey: a dot in end of cell, a subcostal dot above end of cell, and a series of up to five irregular, elongate, large postcellular dots: a long, broad, pale lilac streak in area 1a: discal spots and subterminal dots as above, but slightly larger. Hindwing brown shaded darker towards end of cell: a dot in end of cell, and a series of up to seven large postcellular dots: discal spots and subterminal dots as above, but larger.

♀. Above. Forewing velvety brown: dorsum straight: a small subcostal spot above end of cell: outer-discal spots as in male, but larger, especially that in area 3, and with an extra dot in area 2: subterminal dots as in male, but usually slightly larger. Hindwing velvety brown: spots and dots as in male, but larger, and with an additional discal spot in area 6.

Beneath. Forewing as in male: spots and dots usually larger: pale dorsum sometimes extended to the lilac streak in area 1a. Hindwing as in male, but with discal spots and subterminal dots larger.

Loc. Cape York 1 4 7. Cooktown 10. Cairns 2 4 6 9 10 12. Kuranda 3 6. Ingham 4 5 9. 20♂ 12♀.

The male bears a somewhat close superficial resemblance to the male of *sylvester,* but is at once separated by the absence of the sexmark in area 1a of forewing above. The subterminal series of dots is usually complete in *eichhorni,* but in *sylvester* is always incomplete on forewing above. The female is less like the female of *sylvester,* for it has one instead of three subcostal postcellular spots on forewing above, and *sylvester* is without the lilac streak in area 1a of forewing beneath.

9. **Euploea alecto** Butler. (Ceram).

9a. **E. alecto monilifera** Moore. **Fig. 14, 22.**

Proceedings Zoological Society London 1883, p. 262.

♂. Above. Forewing rich brown-black. Hindwing rich brown-black, with costa silky brown, and tornal area broadly pale brown: faint indications only of a series of pale outer-discal spots in areas 1a to 3.

[illegible] costal and discal spots [illegible]

[illegible] series of small pale [illegible] spots [illegible]

[illegible] spots [illegible] in Figs. 2 and [illegible]

[illegible]

[illegible] resemblance to the male of [illegible]

[illegible] instead of three subapical [illegible] spots [illegible]

[illegible]

[illegible] brown-black, with [illegible] silky [illegible]

[illegible] series of pale [illegible] spots [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Beneath. Forewing brown, with central area dark purplish brown and dorsum pale brown: a dot in end of cell and two postcellular dots: a series of small subapical dots: a long pale streak on vein 1a (in the figure hidden by the hindwing). Hindwing dark brown with termen and dorsum pale brown: a dot in end of cell, and a series of four postcellular dots: indications of discal spots, as above: an incomplete series of minute subterminal dots.

♀. Above. Forewing brown with termen paler: dorsum straight: a series of outer-discal spots, that in area 6 the largest: a complete series of subterminal dots. Hindwing brown: a series of discal spots, two in each area 1b, 1a, 2 and 3: a complete series of large subterminal dots.

Beneath. Forewing brown, paler than above: a dot in end of cell, and a subcostal dot above end of cell, a postcellular dot in area 3 and another in area 4: a lilac-white streak in area 1a: discal spots and subterminal dots as above. Hindwing brown, paler than above: a dot in end of cell, and a series of five postcellular dots: discal spots and subterminal dots as above.

Loc. Cape York. Thursday Is. (*Moore*). 2♂ 1♀.

Our figure of the male is drawn from the Cape York example of *misenus* in the Miskin collection of the Queensland Museum. This is probably Miskin's type, though as usual he failed to label it, and though he omitted mention of the white subapical dots of forewing beneath. These dots are only faintly visible above, but in our own Thursday Is. example are well developed both above and beneath. Our figure and description of the female are taken from a coloured drawing of the type in the British Museum; the figure is of slightly reduced size. Miskin's name must of course sink. The species has nothing in common with *E. climena.*

If these three specimens all came from Australia, and there is no doubt about the males, they certainly belong to the one species. The males are very close to the variable *E. nox* from Aru, and the figure of the female is almost identical with an Aru female of *E. nox* in our collection.

10. **Euploea climena** Cramer. (Moluccas).

This Euploea has several times been recorded from eastern Australia, but always in error: such notes refer to other species, or to specimens that have been wrongly attributed to Australia. This is the first properly authenticated Australian record. Races of *climena* occur in Java, Moluccas, the Aru and the Key Islands.

10a. **E. climena malindeva** nov. **Fig. G.**

♂. Above. Forewing velvety brown, towards termen slightly paler. Hindwing brown: termen broadly cream with veins brown.

Beneath. Forewing brown with dorsum grey: a large spot in end of cell, and a series of three small postcellular spots in areas 2, 3 and 4, white tinged blue: a series of minute subterminal dots in areas 3, 4, 6 and 7, white. Hindwing as above: a spot in end of cell and a series of four small postcellular spots in areas 3, 4, 5 and 6, white tinged blue: a series of subterminal spots in areas 4, 5, 6 and 7, and a pair of small terminal spots in each area, 4, 5 and 6, white.

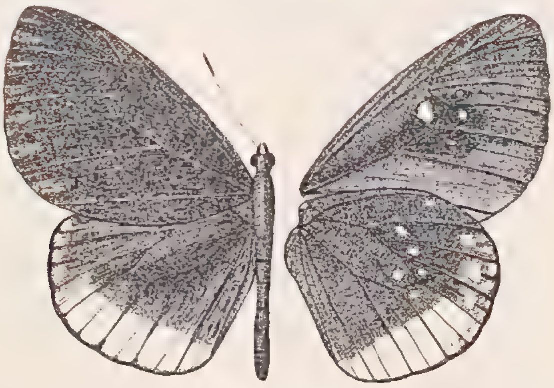

Fig. G. *Euploea malindeva*, male.

Loc. Derby 11. 2♂.

This subspecies is somewhat similar on hindwing above to *E. hyems niveata.* It has been sent us by Mr. O. B. Lower, who suggests the name adopted.

11. **Euploea batesi** Felder.

This is evidently a rare species everywhere within its range. The original form was described by Felder from Halmaheira. Other forms are known from New Guinea; we have specimens from Orokolo, Gulf of Papua, which we consider identical with the Australian race.

11a. **E. batesi belia** nov. **Fig. 10, 12.**

♂. Above. Forewing rich brown, with costa and termen pale brown: very faint indications of a series of large pale outer-discal spots. Hindwing pale brown, with central area, extending to base, rich brown: indications of a series of large pale discal spots.

Beneath. Forewing as above: a faint dot in end of cell, and a series of three faint elongate postcellular dots. Hindwing as above: a large dot in end of cell, and a series of five elongate postcellular dots.

♀. Above as in male, but with dorsum straight, and the indications of discal spots absent.

Beneath as in male: indications of discal spots absent: cell dot, and postcellular dots, of forewing, larger.

Loc. Cape York. Darnley Is. Murray Is. 9. 2♂ 6 ♀.

SECTION 3. Forewing of male with dorsum convex, and sexmark absent. Hindwing of male with a patch of specialised scales (usually hidden under the downward curve of forewing).

Veins 11 and 12 are anastomosed in most, but not in all the Australian butterflies of this section (Butler's *Calliploea*). We have examined long series, and find anastomosis in the majority of the examples, but in a small percentage (largest in *darchia*), vein 11 is curved towards, but does not touch vein 12. Our examination of butterflies belonging this section, from localities beyond Australian limits, shows that in those from the islands to the west of New Guinea, vein 11 is free from vein 12; but in those from the islands to the east of New Guinea, the great majority have vein 11 anastomosed with vein 12.

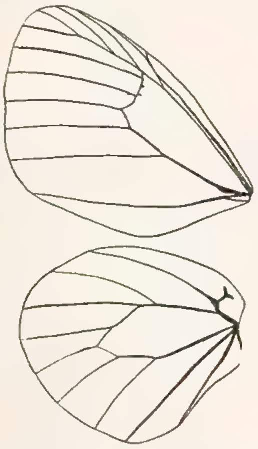

Fig. H. Wing venation of *Euploea niveata.*

12. **Euploea tulliolus** Fabricius.

12a. **E. tulliolus tulliolus** Fabricius. **Fig. 11 (ab. Fig. 13).**

Entomologia Systematica, iii, p. 41, 1793.

♂. Above. Forewing dark brown: a subcostal dot above end of cell: a complete series of outer-discal spots, those in areas 5 to 8 coalescing and forming a broad subapical bar. Hindwing brown with dorsum and termen paler, and costa pale silky brown: rarely traces of an incomplete series of discal dots: a patch of specialised scales in upper half of cell, brown.

Beneath. Forewing brown: subcostal dot as above: a small postcellular spot in area 2, and rarely a dot above in area 3: discal spots as above, but slightly smaller: a series of subterminal dots, complete to vein 8: a silky grey patch, more or less covered with specialised brown scales, in the centre of area 1a. Hindwing brown: usually two discal dots in each area 1a to 3 (omitted in figure), and one in each area 4 to 7: a series of subterminal dots, complete to vein 5 and sometimes to vein 6.

♀. Above as in male, but slightly paler, and with dorsum straight: specialised scales of hindwing absent.

Beneath as in male: specialised scales of forewing absent.

Loc. Darnley Is. 4 5 6. Cairns 6 10. Kuranda 1 2 5 10 12. Ingham 4 5 9. Townsville 2 4. Mackay 1 2 3 4 5. Rockhampton. Brisbane. 17♂ 16♀.

Richmond R. 12 (CAW)

[illegible] from localities [illegible] vein 11 is [illegible] from vein 12 [illegible]

Specimens from the Cairns district have the spots of forewing smaller, and a male and female from Kuranda show a distinct series of discal dots on the hindwing above. From Cape York (March), we have a single aberrant example (fig. 13), which helps to bridge the gap between this and the next subspecies. Darnley Is. examples have been named *E. turneri* Butler, but our specimens from that locality cannot be separated from the Australian race.

12b. **E. tulliolus darchia** Macleay. **Fig. 15,(16.)**

King's Survey Australia, ii, Appendix, p. 462, 1827.

♂. Above. Forewing brown: a subcostal dot above end of cell: a complete series of irregular outer-discal spots, that in area 2 the largest. Hindwing brown with dorsum and termen paler, and costa pale silky brown: a complete series of discal spots, those in areas 2 and 3 sometimes basally joined two and two: an incomplete series of minute subterminal dots: a patch of specialised scales in upper half of cell, brown.

Beneath. Forewing brown shading darker towards centre, with dorsum pale silky brown: subcostal dot as above: usually a small postcellular spot in area 2, and rarely a dot in area 1a: discal dots as above, but smaller: a series of subterminal dots, usually complete: a silky grey patch, more or less covered with specialised brown scales, in centre of area 1a. Hindwing brown: rarely a dot in end of cell, and a series of postcellular dots: discal spots as above: a complete series of subterminal dots.

♀. Above as in male, but paler, and with dorsum straight: specialised scales of hindwing absent.

Beneath as in male: postcellular dots of hindwing more often present: sometimes a pale streak in area 7 of hindwing near base: specialised scales of forewing absent.

Loc. Daly R. 4. Darwin 1 2 5 6 7 8 9 11 12. 32♂ 16♀.

This is a variable species, especially in the size of the spots of the hindwing: these may be as large as in our figure of the type of *E. priapus* (**fig. 15**) or much smaller than in our Cape York aberration of *tulliolus* (**fig. 13**). Butler's *priapus* sinks as a direct synonym of *darchia.*

Owing to the extremely short Latin description, the correct determination of *E. darchia* is somewhat difficult, but the characters given by Macleay point to the Darwin species and not to *E. niveata.* This view is strengthened by the specimens in the British Museum described by Butler as *E. priapus* being labelled *E. darchia.*

13. **Euploea hyems** Butler. (Timor).

13a. **E. hyems niveata** Butler. **Fig. 25.**

Transactions Entomological Society London 1875, p. 2.

♂. Above. Forewing dark brown: a large subcostal dot above end of cell: a complete series of outer-discal spots: rarely faint traces of a series of subterminal dots. Hindwing brown with costa pale silky brown: a complete series of large discal spots, coalescent with each other and with the subterminal dots, and forming a broad band from vein 1a to vein 4 or vein 5: a patch of specialised scales in upper half of cell, brown.

Beneath. Forewing brown: subcostal dot as above: a large postcellular dot in area 2: discal dots as above, but slightly smaller: a complete series of subterminal dots: a silky grey patch, more or less covered with specialised brown scales, in centre of area 1a. Hindwing brown: discal band as above: a series of subterminal dots beyond vein 4 or vein 5.

♀. Above as in male, but slightly paler and with dorsum straight: specialised scales of hindwing absent.
Beneath as in male: specialised scales of forewing absent.

Loc. Cape York 2 4 5 9 10 11. Thursday Is. Darnley Is. 4. Cooktown 10. Cairns 6 9 10. Kuranda 1 3 10 11 12. Mackay 1. 26♂ 16♀.

We have an interesting aberration of this species with the discal band of hindwing much reduced in size, and subterminal dots present in areas 2 and 3 above and beneath.

SECTION 4. Forewing of male with dorsum convex, and with a single sexmark in area 1a.

14. **Euploea corinna** Macleay.

Fruhstorfer considers this species to be a race of *E. eleutho* Quoy, but we do not agree with this conclusion.

14a. E. corinna corinna Macleay. Fig. 19, (ab. Fig. 21, 23).

King's Survey Australia, ii, p. 462, n. 150, 1827.

♂. ABOVE. Forewing brown: a subcostal dot above end of cell: an irregular series of large outer-discal spots, that in area 3 much the largest and moved out of line towards base: a complete series of subterminal dots: a silky sexmark in area 1a, brown. Hindwing brown: a complete series of discal spots, those in areas 1b and 1a sometimes divided, those in areas 2 and 3 always partially divided: a complete series of subterminal dots.

BENEATH. Forewing grey-brown with central area brown: a large dot in end of cell, and a series of four or five large postcellular dots, with often two small subcostal streaks beyond: discal spots and subterminal dots as above, but dots larger. Hindwing grey-brown: often a large dot in end of cell and a series of seven large postcellular dots: discal spots and subterminal dots as above, but dots larger.

♀. ABOVE as in male, but slightly paler, and with dorsum straight: sometimes faint indications of a dot in end of cell and a series of postcellular dots: sexmark absent.

BENEATH as in male.

LOC. Cape York 3 4 5 10 11. Thursday Is. 4 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4. Claudie R. 11. Cooktown 11. Cairns 6 7 8 9 10 11. Kuranda 1 6 7 10 12. Ingham 4 5 9. Townsville 6 7. Mackay 1 2 3 4. Brisbane 1 4 5 6 7 9 10. Stradbroke Is. 12. Mt. Tambourine 12. Richmond R. 2 3.12 Port Macquarie 10. Sydney 1 345. Blue Mts. 1. Wyndham 2 4.8. Daly R. 4. Darwin 2 3&12. Roper R. 45♂ 35♀. Port Macquarie 3/1918

On the forewing above the subcostal dot is very rarely absent: occasionally an example is seen with two or three postcellular dots on forewing above, and sometimes, especially in the female, even with a spot in the end of cell of forewing above. We have several examples in which the hindwing intergrades between **fig. 19** and **fig. 21**. The sexmark of the male is of variable length.

This is our most abundant Australian species, and is the only Euploeid that reaches so far south as Sydney. In the extreme north it is very variable, and aberrant examples have been described by Miskin as *E. euclus*: we figure his types (**fig. 21, 23**) which are in the Queensland Museum. We ourselves have specimens with even fewer spots than these two figures: these aberrations are not uncommon on Cape York and the islands of Torres Straits.

E. angasi Felder is a synonym of this species, and so no doubt is *E. boisduvali* Lucas. *E. lewini* Felder belongs to a different section (*Nipara*), and is recorded from Australia in error.

15. Euploea guerini Felder. (Aru Is.).

This species can always be recognised by the spots of the forewing. Both above and beneath these are small and white, but their size above is largely increased by pale blue marginal scales.

15a. E. guerini amycus Miskin. Fig. 18, 20.

Proceedings Linnean Society New South Wales 1889, p. 1044 (1890).

♂. ABOVE. Forewing dark brown: a series of from three to seven subapical spots broadly margined pale blue: a single broad silky brown sexmark in area 1a. Hindwing dark brown with costa and termen paler: sometimes a discal dot in area 4 and another in area 5.

BENEATH. Forewing brown with central area darker, and dorsum pale silky brown: a dot in end of cell, and sometimes a series of postcellular dots in areas 2, 3 and 4: sometimes a series of five subapical spots: a long broad pale yellow streak in area 1a. Hindwing brown with central area darker: a dot in end of cell: sometimes a series of four postcellular dots and a series of three discal spots.

♀. ABOVE. Forewing dark brown with termen paler and dorsum straight: a series of four to eight pale blue subapical spots, that in area 6 centred white. Hindwing dark brown with termen paler and costa much paler.

BENEATH as in male.

LOC. Cape York. Thursday Is. 6. Darnley Is. 12. 7♂ 3♀.

Fig. 18 is drawn from the type male, and **fig. 20** from a Darnley Is. specimen. Our four examples differ from one another in markings and also slightly in shape, and it is possible they represent two distinct forms: but since *E. guerini* is extremely variable wherever it occurs, we hesitate to separate our forms until further material is available.

Wyndham (W H Macmillan) Aug 1915. Darwin (TOT) Aug 1917.

SECTION 5. Forewing of male with dorsum convex, and with a single pale sexmark in area 1a. Hindwing of male with a patch of specialised scales near costa.

16. **Euploea usipetes** Hewitson. (New Guinea).

16a. **E. usipetes hippias** Miskin. **Fig. 17.**

Proceedings Linnean Society New South Wales 1889, p. 1040 (1890).

♂. ABOVE. Forewing brown: central area, including lower portion of cell, basal portion of areas 2 and 3, and upper portion of area 1a near base, yellow-brown: a short broad sexmark below middle of area 1a, whitish. Hindwing brown: a large oval patch of specialised scales in upper half of cell and extending towards costa, yellow-brown.

BENEATH. Forewing brown: central area larger than above, extending to vein 1a, yellow-brown: dorsum silky grey: sexmark more prominent than above. Hindwing brown.

♀. ABOVE as in male, but with dorsum straight: central area paler and extending towards termen: sexmark absent.

BENEATH as in male: sexmark absent.

Loc. Cape York. Thursday Is. 1♂ 1♀.

Our figure is drawn from the type in the Queensland Museum: this, and a female from Thursday Is. in the collection of Mr. R. Illidge, are the only Australian examples known: the species is abundant in New Guinea.

Euploea treitschkei Boisduval. (New Ireland).

E. treitschkei viridis Butler. **Fig. 24.**

Annals Magazine Natural History 1882, p. 38.

♀. *Above. Forewing bronze green: a large spot in end of cell, and a short broad streak in area 1a. Hindwing bronze green, towards costa paler: a series of six irregular elongate discal spots.*

Beneath. Forewing greenish brown, towards dorsum paler: a divided spot in end of cell, a series of three postcellular spots, and a long broad white streak in area 1a. Hindwing greenish brown: a large spot in end of cell, and a series of three postcellular spots: discal spots as above.

Loc. Thursday Is. (*Butler*). 1♀.

Our figure is of slightly reduced size, and together with the description is taken from a coloured plate of the type in the British Museum: no other example has been taken within Australian limits. The records show that this specimen reached the British Museum through a dealer. Thursday Is. is a thickly populated trade centre of only a few hundred acres extent, and many collectors have visited it. Our own collector resided upon the adjacent mainland for over three years, paid many visits to Thursday Island, kept special watch for rare species of this genus, and failed to find this one. We therefore consider it almost certain that this island was the place of export but not the place of capture.

SECTION 6. Forewing of male with dorsum convex, and with a double sexmark in area 1a. (This section is equivalent to Butler's genus *Stictoploea*).

17. **Euploea sylvester** Fabricius.

17a. **E. sylvester sylvester** Fabricius. **Fig. 28.**

Entomologia Systematica, iii, p. 41, 1793.

♂. ABOVE. Forewing velvety black: a series of two or three subcostal dots above end of cell: an irregular series of outer-discal spots, one in each area 1a, 2 and 3: sometimes two minute dots (placed nearer termen) in areas 4 and 5: a large spot in area 6 and another in area 7: the spot in area 1a often divided: a very incomplete series of subterminal dots: two long silky brown sexmarks in area 1a. Hindwing brown-black: a complete series of large partly divided discal spots: a complete series of subterminal dots.

BENEATH. Forewing brown with central area dark brown and dorsum grey: a dot in end of cell: a series of subcostal dots, larger than above and extended as a series of postcellular dots to area 2: discal spots and subterminal dots as above: two long yellow-brown streaks in area 1a. Hindwing brown: a small spot in end of cell, and a series of postcellular dots: discal spots and subterminal dots as above.

♀. Above. Forewing brown-black: dorsum straight: spots and dots as in male with usually an extra dot in the subcostal series. Hindwing as in male, but discal spots slightly larger.

Beneath as in male: discal spots slightly larger: pale streaks in area 1a of forewing, absent.

Loc. Cape York 4 10 12. Thursday Is. 8. Prince of Wales Is. 5 6 7. Banks Is. 2. Claudie R. 11. Cooktown 4 10 12. Cairns 6 7 9 10 11. Kuranda 1 2 4 7 9 12. Townsville 3 4. Mackay 2 3. 40♂ 37♀.

This well known species is fairly constant south of Cooktown, but in the extreme north many aberrant examples are met with. As some of these have been described as distinct species, we have found it necessary to figure a number of aberrations. We have carefully examined Miskin's types of *E. dardanus*, and *E. crithon* (**fig. 32, 33**) and consider them both only aberrations of *sylvester*. We have not figured Miskin's type of *E. dardanus*, but our **fig. 31** is almost identical, except that it has slight traces of subterminal dots both above and beneath, which are wanting in the type. **Fig. 30** shows the upper surface of two of our female examples which intergrade between *dardanus* and *crithon*. We propose to restrict those names to the sets of aberrations briefly described below.

17aa. **E. sylvester sylvester, f. dardanus** Miskin. **Fig. 30, 31.**

Proceedings Linnean Society New South Wales 1889, p. 1041 (1890).

♂ ♀. This name will include all those specimens of *sylvester* in which the subterminal dots of both wings above and beneath, and the subcostal spot above end of cell of forewing above, are absent. The hindwing has the discal spots imperfectly developed, but always shows a series of obscured white discal spots both above and beneath.

Loc. Cape York 2 3 4 10. Prince of Wales Is. 7. Banks Is. 2 3. Thursday Is. 3. 12♂ 6♀.

17ab. **E. sylvester sylvester, f. crithon** Miskin. **Fig. 32, 33.**

Proceedings Linnean Society New South Wales 1889, p. 1042 (1890).

♂ ♀. This name will include all specimens of *sylvester* in which the series of discal spots of hind wing is absent, and typically those in which the forewing is spotless.

Loc. Cape York 1 2 3 12. Darnley Is. 4♂ 2♀.

We had anticipated that the *dardanus-crithon* aberrations could have been retained as a single distinct species, but we now have intergrades distinctly connecting the heavily spotted typical *sylvester* with the almost spotless *crithon*. It is only in the far north these aberrations and intergrades occur: none are yet known from the Cairns district where typical *sylvester* is abundant: Cape York and Prince of Wales Is. have furnished us with occasional aberrations, and from Banks Is. we have had more of the abnormal than of the typical form. We consider it probable that *crithon* is identical with *Stictoploea immaculata* Butler from New Guinea: we have a large number of *Stictoploea* from New Guinea, and among them is no example so heavily spotted as that shown on the right hand section of our **fig. 30**.

17b. **E. sylvester pelor** Doubleday & Hewitson. **Fig. 29.**

Genera Diurnal Lepidoptera, p. 88, pl. 11, f. 1, 1847.

♂. Above. Forewing velvety black: a series of two or three small subcostal spots: an irregular series of outer-discal spots, a large one in area 2 and another in area 3: two dots (placed nearer termen) in areas 4 and 5: two large spots in areas 6 and 7, and sometimes a dot in area 8: subterminal dots absent: two narrow silky brown sexmarks in area 1a, the upper one sometimes much shorter than the lower. Hindwing brown: a series of discal spots, those in areas 2 and 3 usually clearly divided: subterminal dots usually absent, if present, faint and incomplete.

Beneath. Forewing brown with central area darker and dorsum grey: a dot in end of cell: subcostal dots as above, but larger and extending as a series of postcellular dots to area 2: discal spots and dots as above: a complete series of minute subterminal dots. Hindwing brown with dorsum grey: a dot in cell and a series of up to seven postcellular dots: discal spots as above: a complete series of subterminal dots.

♀. Above. Forewing as in male, but dorsum straight: a series of four small subcostal spots above end of cell: discal dots in areas 4 and 5 usually larger: sexmark absent. Hindwing as in male.

Beneath as in male.

Loc. Daly R. 4. Darwin 1 2 3 4 5 12. Roper R. 31♂ 26♀.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

17ba. E. sylvester pelor, f. dardanoides nov.

♂. Above. Forewing velvety brown: a small subcostal dot above end of cell: an irregular series of outer-discal spots: a large one in area 2 and another in area 3: two minute dots (placed nearer termen) in areas 4 and 5: two large spots in areas 6 and 7: subterminal dots absent: two narrow silky brown sexmarks in area 1a. Hindwing brown: a series of obscured discal spots: subterminal dots absent.

Beneath. Forewing brown with central area darker and dorsum grey: a dot in end of cell, a subcostal dot, and a series of up to seven postcellular dots: discal spots and dots as above: subterminal dots absent. Hindwing brown: a series of obscured discal spots, sometimes very faint: subterminal dots absent.

♀. Above. Forewing as in male, but dorsum straight: a series of four subcostal spots above end of cell: discal spots as in male: sexmark absent. Hindwing as in male.

Beneath as in male.

Loc. Darwin 1 2 4. 5♂ 3♀.

In addition to this very distinct form, we have four examples of *pelor* (2 males 2 females) in which the discal spots of forewing above are much enlarged and are basally edged with blue scales: the discal spots of hindwing are not obscured, are larger than usual, and are only partially divided: the series of subterminal dots is almost complete on both wings above, and complete beneath.

Subfamily **SATYRINAE.**

Ovum. Usually spherical: in colour some shade of green: deposited upon the foodplant singly.

Larva. Subcylindrical or subfusiform: usually, but not always, smooth: head hard and often with lateral processes: tail bifid: in colour some shade of green or brown: remains hidden during daylight and feeds after dark upon grasses: that of *Melanitis* also feeds upon sugarcane, and that of *Tisiphone* is confined to *Cladium* (swordgrass). (**Fig. L75, L90**).

Pupa. Smooth, short, and fusiform: usually suspended by the tail to the foodplant or to the undersurface of stones or logs: rarely loose upon the earth under leaves or bark or in the shelter of grass tussocks. (**Fig. P75, P90**).

Imago. Rarely of large size: wings broad and rounded, in Australian species never tailed: cells of both wings closed: principal veins of forewing, except in *Melanitis*, swollen at base. Forewing with twelve veins: vein 10, except in *Yphthima* and *Hypocysta*, from subcostal before end of cell: discocellulars very variable: sometimes directed outwards, making vein 5 very much shorter than vein 6, sometimes directed inwards, making vein 5 very much longer than vein 6, sometimes only feebly developed. Hindwing with nine veins (including vein 1b): discocellulars sometimes only feebly developed. Eyes sometimes smooth, sometimes densely hairy.

Range. The greater number of the Australian genera of this subfamily are peculiar to our continent, and are characteristic of the faunal region of south eastern Australia.

The genera fall naturally into three sections. The first includes *Mycalesis* and *Orsotriaena*, with the discocellulars of hindwing very weak: these genera have been introduced through New Guinea and have only reached the northern parts of Australia. The second section is formed by *Melanitis*, the one genus of the subfamily in which none of the veins of forewing are swollen at base: this also has reached Australia through New Guinea, but has extended farther south along the eastern coast. The third section contains the remaining genera and has two divisions: one for *Yphthima* and *Hypocysta* which are also found in New Guinea and elsewhere: the other for *Nesoxenica, Heteronympha, Argynnina, Oreixenica, Xenica* and *Tisiphone*, all members of a peculiarly Australian group: with the exception of *Tisiphone helena*, none of these have been recorded north of latitude 25°.

The *Satyrinae* are essentially shade loving species, usually found in wooded gullies and in the shadow of trees or cliffs. They are often to be seen resting in company in cavities of a cliff face, or beneath overhanging rocks: at dusk they are sometimes so sluggish they may be lifted from their resting place with fingers or forceps. Their flight is weak, the one exception being *Melanitis*, which has a swift, elusive, jerky flight, when disturbed in the daytime. All the species are local in their habits: they are very constant in their times of emergence, and the greater number of the males usually appear on the wing a week or ten days in advance of the females. They are usually some shade of brown with paler markings; in other countries some species of this subfamily have wing areas of bright blue. They show ocelli of varying size on the wings both above and beneath. These ocelli are often white pupilled and usually dark ringed: they are variable in size and number even in the same species, and those nearest apex and tornus show a tendency to divide, when one of the pair is usually larger than its fellow. At first sight many of the species bear a superficial resemblance to each other.

A tendency towards melanism (an increase in the size and intensity of the dark markings of the wings) is noticeable in the butterflies of this subfamily. In illustration of this, we have figured melanic examples of *Heteronympha merope* and *Heteronympha philerope*.

We have only defined two new genera, though upon the venation alone nearly every species of *Heteronympha* might be separated. In the generic table we have used as a minor subdivision the relative lengths of vein 5 and vein 6 of the forewing. This difference in length is the result of the discocellulars being directed towards the termen or towards the base. The generic definitions are based entirely upon Australian specimens.

Key to the Genera of *SATYRINAE*.

A. Veins of forewing not swollen at base: eyes smooth .... *Melanitis.*
B. Veins of forewing swollen at base.
a. Eyes hairy.
a^1. Vein 3 and vein 4 of hindwing approximate at base: male with sexmark on both wings .... *Mycalesis.*
b^1. Vein 3 and vein 4 of hindwing separate at base.
a^2. Vein 6 of forewing shorter than vein 5 .... *Nesoxenica.*
b^2. Vein 6 of forewing longer than vein 5.
a^3. Cell of hindwing about half length of wing .... *Heteronympha.*
b^3. Cell of hindwing more than half length of wing .... *Argynnina.*
b. Eyes smooth.
a^1. Vein 3 and vein 4 of hindwing approximate at base: male with sexmark on both wings .... *Orsotriaena.*
b^1. Vein 3 and vein 4 of hindwing separate at base.
a^2. Vein 6 of forewing shorter than vein 5.
a^3. Vein 10 from vein 7 well beyond end of cell .... *Hypocysta.*
b^3. Vein 10 from subcostal close to end of cell .... *Oreixenica.*
b^2. Vein 6 of forewing longer than vein 5.
a^3. Male with sexmark on forewing .... *Xenica.*
b^3. Male without sexmark.
a^4. Vein 10 from vein 7 well beyond end of cell .... *Yphthima.*
b^4. Vein 10 from subcostal before end of cell .... *Tisiphone.*

Genus **MYCALESIS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 55, 1816.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes hairy. Forewing with vein 12, median vein and vein 1a, swollen at base: vein 10 from subcostal before end of cell: vein 6 somewhat shorter than vein 5: cell about half length of wing. Hindwing with vein 3 and vein 4 arising very close together. The sexmarks of the male consist of a variable patch of specialised scales set in a pearly area on vein 1a of forewing beneath, and a similar patch at base of vein 7 of hindwing above, which is covered by a pencil of long hairs lying along the subcostal vein.

TYPE. *Mycalesis evande* Cramer, from Africa.

This genus is found throughout the Indo-Australian and Aethiopian Regions. Moore has split up the Indo-Australian species into a large number of genera, but most of these are, we believe, only admissible as subgenera. In Australia the genus is only found north of latitude 25°. The butterflies are all small and of weak flight, and occur abundantly in grassy clearings, flying close to the ground. The arrangement of the ocelli of the hindwing beneath affords some help in the determination of the species.

18. **Mycalesis sirius** Fabricius.

18a. **M. sirius sirius** Fabricius. **Fig. 486, 487.**

Systema Entomologiae, p. 488, 1775; Donovan, Insects New Holland, pl. 28, f. 3, 1805.

♂. ABOVE. Forewing cedar brown: sometimes shaded paler towards base: a series of two to four dark subterminal ocelli, that in area 2 the largest. Hindwing cedar brown: a series of three to five subterminal ocelli, that in area 1a very rarely double.

BENEATH as above: sometimes paler: often with a discal line from below and beyond middle of costa of forewing to near tornus of hindwing, obscurely paler: usually five ocelli on forewing and six on hindwing, all more sharply defined than above.

♀. ABOVE and BENEATH as in male, but slightly paler, and with pale discal line beneath less obscure.

LOC. Cape York 2 3 7. Thursday Is. 12. Prince of Wales Is. 6. Banks Is. 2 3. Darnley Is. 6 7 12. Claudie R. 1. Cairns 5 6 7 8 10 11. Kuranda 1 2 3 4 5 6 7 11 12. Ingham 4 5 9. Mackay 4. Daly R. 4. Darwin 3 8 9. Melville Is. 25♂ 17♀.

The outer areas of the forewing above are sometimes smoky: the ocelli vary considerably in size and number.

19. **Mycalesis terminus** Fabricius.

This species affords the best Australian illustration of a butterfly with a distinctive wetseason and dryseason form: a common occurrence among the butterflies of the tropics. *M. terminus terminus* is the form taken during the wetseason (summer) months, and *tira* is the less abundant form taken during the dryseason (winter) months. Neither form is strictly confined to the wet season or the dry season, but each greatly predominates during its own period.

Examples from Murray Is. and Darnley Is. are of a decidedly duller brown, and have the discal area of forewing much paler.

19a. **M. terminus terminus** Fabricius. **Fig. 72, 73.**

Systema Entomologiae, p. 488. 1775: Donovan, Insects New Holland, pl. 28, f. 4, 1805.

♂. ABOVE. Forewing reddish brown, with costa, apex and termen, broadly brown: an irregular illdefined discal area, orange-yellow, centred by a single prominent black ocellus in area 2. Hindwing brown with discal area shaded reddish brown: a series of three or four dark subterminal ocelli placed in a straight line.

BENEATH. Brown: outer areas paler and variable: a discal line from below and beyond middle of costa of forewing to near tornus of hindwing, red-brown outwardly edged pale yellow: forewing with five and hindwing with six dark irregular subterminal ocelli.

♀. ABOVE and BENEATH as in male: sometimes slightly paler.

LOC. Thursday Is. 5. Prince of Wales Is. 5 6. Banks Is. 2 3. Darnley Is. 5 6 12. Murray Is. 8 9. Claudie R. 1. Cooktown 10. Cairns 1 6 7. Kuranda 1 4 5 6 7 8. Cardwell 6 8. Ingham 4 5 9. Mackay 2 3 4 7. 54♂ 25♀.

19aa. **M. terminus terminus, f. tira** nov. **Fig. 74.**

♂. ABOVE. Forewing pale reddish brown, with costa, apex and termen, broadly dull brown: an irregular illdefined discal area, dull orange-yellow centred by a single black ocellus in area 2. Hindwing dull brown with discal area shaded pale reddish brown: a series of three or four minute dark subterminal ocelli, placed in a straight line.

BENEATH brown: outer areas paler: a discal line from below and beyond middle of costa of forewing to near tornus of hindwing, red-brown outwardly edged pale yellow: forewing with five and hindwing with six minute dark subterminal ocelli.

♀. ABOVE and BENEATH as in male: sometimes slightly paler.

LOC. Kuranda 10 11. Mackay 9. 15♂ 11♀.

20. **Mycalesis perseus** Fabricius.

This name has been applied in error to the allied Indian species. The type is still in the Banksian collection of the British Museum; it is from Australia and was no doubt captured in the neighbourhood of Cooktown. This is only one of several instances in which names given to Australian insects have been applied by early entomologists to allied species from other countries, and the error persisted in by later reviewers.

This is an exceedingly variable species, and the dryseason form *perseus perseus* has up to the time of writing been very poorly represented in Australian collections. We have secured long series from Cape York and the adjacent islands, and find the variation so great that in several hundred examples it is difficult to find two exactly identical. It appears to grade almost imperceptibly into the wetseason form *infuscata*.

20a. **M. perseus perseus** Fabricius. **Fig. 479, 480.**

Systema Entomologiae, p. 488, 1775: Donovan, Insects New Holland, pl. 26, f. 3, 1805.

♂. Above. Forewing dull brown: usually a variable obscure ocellus with whitish pupil in area 2. Hindwing dull brown.

Beneath brown covered with fine dark striae: a dark discal line, edged outwardly by an obscure variable pale sometimes whitish line, from below and beyond middle of costa of forewing to near tornus of hindwing: outer areas paler and more variable than basal areas. Forewing with two to four dark subterminal ocelli. Hindwing with five to seven dark subterminal ocelli, the pair in area 1a always present, and the ocellus in area 3 out of line with the three below it.

♀. Above and Beneath as in male, but usually paler and larger.

Loc. Cape York 4 5 6 7. Thursday Is. 3 6. Prince of Wales Is. 3 6 7. Cooktown 9 10. Townsville 6. 134♂ 67♀.

20aa. **M. perseus perseus, f. infuscata** Macleay. **Fig. 481, 482.**

Proceedings Entomological Society N. S. Wales, p. liii, 1866.

♂. Above. Forewing dull brown: usually a single variable obscure dark ocellus with pale pupil, in area 2. Hindwing dull brown.

Beneath brown: a dark discal line, edged outwardly by a variable whitish line, from below and beyond middle of costa of forewing to near tornus of hindwing: outer areas sometimes paler than basal areas. Forewing with four prominent dark subterminal ocelli. Hindwing with seven prominent dark subterminal ocelli, that in area 3 out of line with the three below it.

♀. Above and Beneath as in male, but usually paler and larger.

Loc. Cape York 2 3 4 5 6 7 12. Thursday Is. 6 12. Prince of Wales Is. 5 6. Banks Is. 2 3. Darnley Is. 12. Claudie R. 1. Darwin 3 4 5 12. 63♂ 37♀.

This is the wetseason form and is distinguished from typical *perseus* by the absence of striae beneath, and the clearer discal line and more prominent ocelli beneath. We have examined the series in the Australian Museum collection but no particular specimen is indicated as the type: *modestus* Miskin and *zia* Butler are synonyms.

Genus **ORSOTRIAENA** Wallengren.

Ofversight Vetenskaps Akademiens Forhandlingar, 1858, p. 79.

Antennae about half the length of costa, with clubs long gradual and slender. Eyes smooth. Forewing with vein 12 swollen at base: vein 10 from subcostal before end of cell: vein 6 slightly shorter than vein 5: cell about half the length of wing. Hindwing with vein 3 and vein 4 arising very close together. The sexmark of the male consists of a patch of hairs above vein 1a of forewing above, which cover a fold of the wing; and a brush of hairs on both sides of the median vein of hindwing above.

Type. *Orsotriaena medus* Fabricius, from India.

This genus is allied to and closely resembles the preceding one, but is easily separated by its smooth eyes.

21. **Orsotriaena medus** Fabricius. (India).

21a. **O. medus moira** nov. **Fig. 477, 478.**

♂. Above. Forewing dull brown. Hindwing dull brown with an obscure terminal line, whitish.

Beneath dull brown: a well defined white discal line from below and beyond middle of costa of forewing to near tornus of hindwing: a narrow double subterminal line, whitish: two prominent silver ringed ocelli in areas 2 and 5 of forewing: three similar ocelli in areas 2, 5 and 6 of hindwing.

♀. Above and Beneath as in male but usually larger and paler.

Loc. Cape York 2 3 4 5 6 7 8 9 10. Banks Is. 2 3. Darnley Is. 4 5 12. 22♂ 10♀.

We have several aberrant examples with additional ocelli beneath. In one of these the ocellus of area 5 of forewing and also that of area 5 of hindwing, has two white pupils, and there is an extra minute ocellus in area 3 of hindwing. The central white line beneath is of variable width and intensity.

Darwin TOT Aug 14.

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Urungal Ⓦ Oct '20. Darwin 5 [illegible]

Genus **MELANITIS** Fabricius.

Illiger's Magazine, vi, 1807, p. 282.

Antennae less than half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 10 from subcostal before end of cell: cell more than half the length of wing. Hindwing with vein 3 and vein 4 arising well apart: termen produced to a blunt tooth at vein 2 and at vein 4. (**Fig. I**).

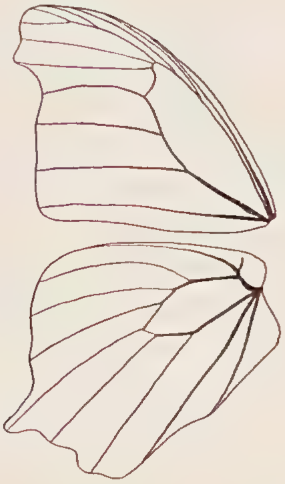

Fig. I. Wing venation of *Melanitis bankia.*

Type. *Melanitis leda* Linne, from Amboina.

22. **Melanitis leda** Linne. (Amboina).

The habits of this well known and wide ranging butterfly are unusual: during the daylight it is rarely seen on the wing, but it flies at and after dusk. There are two forms of the Australian race: they are not sharply divided in the times of their appearance; from December to March *barnardi* predominates but later in the season both forms may be taken on the wing. The two figures represent the two extremes of shape.

22a. **M. leda bankia** Fabricius. **Fig. 59.**

Systema Entomologiae, p. 499, 1775.

♂. Above. Forewing rich red-brown with a discal suffusion dull orange-brown: a large patch between vein 3 and vein 5, black, enclosing two spots, white. Hindwing rich red-brown: often a faint subterminal dot in area 2, whitish.

Beneath. Very variable: often mottled or variegated: no two examples exactly alike: ocelli usually absent, if present only faintly indicated.

♀. Above and Beneath as in male: usually slightly paler.

Loc. Cape York 5 7 10. Prince of Wales Is. 5 6 7. Murray Is. 9. Cairns 6 8 9. Kuranda 5 6 7 10. Atherton 3. Ingham 4 5. Townsville 6 7. Mackay 4 5 6 7. Brisbane 3 4 5 6 11. Richmond R. 4.3.5.9.10. Port Macquarie 10. Darwin 8 11. 30♂ 27♀. Port Macquarie 3.4/1918.

This is the more abundant non-ocellated form: it is taken very freely from April to August, but also occurs later in the season. The termen of the forewing is produced at vein 5 to a blunt tooth. We have an example from Brisbane with an additional small black discal patch in area 2 of forewing above.

22aa. **M. leda bankia f. barnardi** Lucas. **Fig. 98.**

Proceedings Royal Society Queensland 1892, p. 4.

♂. ABOVE. Forewing red-brown with an obscured discal suffusion, dull orange-brown: a patch between vein 3 and vein 5, brown-black, enclosing two small spots, white. Hindwing red-brown: often a faint subterminal ocellus in area 2, and sometimes another in area 3.

BENEATH variable: usually some shade of grey-brown covered with dark brown striae: forewing with one to three and hindwing with five, irregular subterminal ocelli.

♀. ABOVE and BENEATH as in male: usually slightly paler and tooth of vein 4 of hindwing longer.

LOC. Prince of Wales Is. 6. Banks Is. 2 3. Darnley Is. 4 5 12. Claudie R. 1. Cairns 5 6. Kuranda 2 12. Ingham 4 9. Mackay 1 3. Brisbane 1 2 12. Stradbroke Is. 12. Esk 2. Richmond R. 1 2. Daly R. 4. Darwin 12. 24♂ 21♀. Port Macquarie 12/1945

This is the less abundant ocellated form predominant from December to March. The termen of the forewing is much straighter than in *bankia.*

23. **Melanitis amabilis** Boisduval. (New Ireland).

23a. **M. amabilis valentina** Fruhstorfer. **Fig. 789.**

Entomologische Zeitschrift, Stuttgart, 1908, p. 83.

♂. ABOVE. Forewing chocolate brown: a broad oblique band from costa at half to just before vein 1a at tornus, yellow. Hindwing chocolate brown: produced to a tooth at vein 4.

BENEATH. Forewing red-brown: apex suffused whitish: costa narrowly banded with white: two bands across cell, whitish: oblique band as above but broader, extending along dorsum, and pale yellow: a small subapical ocellus in area 5, red-brown centred whitish. Hindwing red-brown: dorsum, and termen to vein 3, broadly suffused whitish: two obscure bands from costa across cell, whitish: a large subapical ocellus in area 6, and a minute one nearer termen in area 5: a row of three subterminal ocelli in areas 1a, 2 and 3, middle one the largest.

♀. ABOVE. Forewing brown: basal third red-brown: a broad oblique band from costa at half to just before vein 1a at tornus, white. Hindwing red-brown: termen brown.

BENEATH as in male, but with oblique band of forewing white.

LOC. Darnley Is. 4. 1♂.

Our single male appears to be identical with Fruhstorfer's subspecies from New Guinea, which we have used in describing the female.

Genus **YPHTHIMA** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 63, 1816: Elwes & Edwards, Transactions Entomological Society London 1893, p. 1-54.

Antennae less than half the length of costa with clubs long, gradual and slender. Eyes smooth. Forewing with vein 12 and median vein moderately, and vein 1a slightly, swollen at base: vein 11 from subcostal before end of cell: vein 10 from vein 7 beyond end of cell: vein 6 and vein 5 of almost equal length: cell about half the length of wing. Hindwing with vein 3 and vein 4 arising well apart.

TYPE. *Yphthima philomela* Johannsen, from Java.

This genus contains a number of small Indo-Malayan butterflies of very similar general appearance. Bingham states that vein 11 of forewing is given off beyond the apex of cell. We find this is not so: vein 11 arises from the subcostal in *arctous*, and also in several of the Indian species listed by Bingham: we have examined many specimens, and bleached quite a number and we find this character constant.

24. **Yphthima arctous** Fabricius. **Fig. 141.**

Systema Entomologiae, p. 489, 1775: Donovan, Insects New Holland, pl. 24, f. 2, 1805.

♂. ABOVE. Forewing brown: a large twin-pupilled subapical ocellus in areas 4 and 5, black ringed orange. Hindwing brown: a small sometimes very minute subtornal ocellus in area 2, black ringed orange.

BENEATH yellowish brown covered with faint darker striae: ocelli as above.

♀. ABOVE and BENEATH as in male: sometimes paler.

LOC. Cape York 9 11. Prince of Wales Is. 5 6. Banks Is. 2 3. Darnley Is. 5 6 12. Murray Is. 8 9. Claudie R. 1. Coen 11. Cooktown 10. Cairns 6 7. Kuranda 6 7. Ingham 4 5 9. Mackay 1 2 3 4
Toronto (W.D.F.) Urunga (W) Oct 20 Richmond R. 9.10 (GAW 1922)

7 8 9 10 11 12. Brisbane 5 10. Mt. Tambourine 12. Richmond R. 1 3 9 10. Dorrigo 11 12. Port Macquarie 10. Manning R. 3. Sydney 1 2 3 4 10 11 12. Daly R. 4. Darwin 8. Bathurst Is. Melville Is. 33♂ 27♀. Toronto 4/17 Port Macquarie 3.4/1918

This small butterfly is usually very constant in its markings, but in our long series we have several aberrant examples. One has a second ocellus below the subtornal one, above and beneath: another also has the second subtornal ocellus, and has an extra pair of ocelli beneath: two others show no trace of the subtornal ocellus above. Semper figures two such aberrations in the Journal of the Godeffroy Museum 1878, pl. 8.

Genus **HYPOCYSTA** Westwood.

Genera Diurnal Lepidoptera, p. 397, 1851.

Antennae about half the length of costa with clubs long and gradual. Eyes smooth. Forewing with vein 12 slightly, and median vein and vein 1a moderately, swollen at base: vein 11 from subcostal before end of cell: vein 5 much longer than vein 6: cell narrow and nearly two thirds the length of wing. Hindwing with vein 3 and vein 4 arising well apart. Vein 10 of forewing arises from well beyond the end of cell in *euphemia*, and from beyond the end of cell in *irius*: in the remaining Australian species of the genus, it arises from either at or just before the end of cell. (**Fig. J.**)

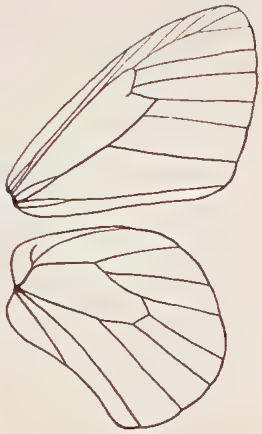

Fig. J. Wing venation of *Hypocysta euphemia* (enlarged).

TYPE. *Hypocysta euphemia* Westwood.

In this genus there are included a number of small weak-flying butterflies from Australia, New Guinea, and some of the adjacent islands. The discocellulars of forewing are very much bent inwards. The males have no sexmark but the females may be separated by the longer subterminal orange line of hindwing above, and the more rounded termina of the wings.

25. **Hypocysta euphemia** Westwood. **Fig. 79, 80, 81.**

Genera Diurnal Lepidoptera, p. 398, pl. 67, f. 3, 1851.

♂. ABOVE. Forewing orange-brown with margins and base dusted with dark brown: a small subapical ocellus, black ringed dark brown: a large ocellus in area 2, black. Hindwing orange-brown with margins dusted dark brown: an obscure small subapical ocellus, black: a large subtornal ringed ocellus, black: an intermediate obscure dark spot.

BENEATH. Forewing orange with apex shaded darker: discal and terminal narrow lines, brown: ocelli as above. Hindwing orange with base suffused brown: discal and terminal narrow lines, brown: subapical and subtornal ocelli enclosed by a silver line and with a small silver ring midway between them: a subterminal line, silver.

♀. ABOVE orange with margins dusted dark brown: ocelli as in male.

BENEATH as in male.

LOC. Stanthorpe. Sydney 1 3 4 5 8 9 10 11 12. Illawarra 1 3 4. Blue Mts. 1 3 4 11 12. Pambula 12. Darlington, W.A. 35♂ 24♀.

This butterfly frequents cliff faces, railway cuttings and similar sheltered spots.

26. **Hypocysta irius** Fabricius. **Fig. 146, 147.**

Systema Entomologiae, p. 487, 1775: Donovan, Insects New Holland, pl. 28, f. 1, 1805.

♂. Above. Forewing brown: an irregular discal area, orange. Hindwing brown: a large outer area, orange: an obscure subapical ocellus, brown: a large subtornal ocellus, black.

Beneath. Forewing as above, but paler: a minute obscure subapical ocellus, brown. Hindwing pale brown: outer area pale yellow: subapical and subtornal ocelli black, enclosed by a silver line, and with a minute silver ring midway between them: a subterminal line, silver.

♀. Above and Beneath as in male, but paler: a subterminal narrow line on hindwing above, orange.

Loc. Cape York 4 5 7 8. Claudie R. 11. Cooktown 10. Cardwell 8. Kuranda 1 2 10 11 12. Ingham 4 5. Townsville 9 10. Mackay 2 3 4 5 9 10. Rockhampton. Brisbane. 24♂ 15♀.

27. **Hypocysta metirius** Butler. **Fig. 144, 145.**

Transactions Entomological Society London 1875, p. 3.

♂. Above. Forewing brown. Hindwing brown: an outer area, extending along area 6 towards base, orange: an obscure subapical ocellus, brown: a large subtornal ocellus, black: a narrow subterminal line, orange.

Beneath. Forewing pale brown: a very obscure minute subapical ocellus, brown. Hindwing pale brown: an outer area, pale orange: subapical and subtornal ocelli, black, enclosed by a silver line, and usually with a minute silver spot midway between them: a subterminal line, silver.

♀. Above as in male, slightly paler: subterminal orange line of hindwing broader and longer.

Beneath as in male.

Loc. Kuranda 1 2 3 6 7 8 12. Herberton 1. Eidsvold 2. Richmond R. 3 5 9 10. Port Macquarie 10. Manning R. 3. Ourimbah 4. Sydney 1 2 3 4 9 10 11 12. Loftus 9. Illawarra 2 3 4 5. Moruya 4. Pambula 12. 63♂ 43♀. Port Macquarie 3.4/1918 Toronto 2.4.20 Urunga Ⓦ 10/20

This species is closely allied to *irius* but smaller in size. It is easily distinguished by the absence of the discal orange area of forewing above.

28. **Hypocysta pseudirius** Butler. **Fig. 142, 143.**

Transactions Entomological Society London 1875, p. 3.

♂. Above. Forewing pale brown. Hindwing pale brown: an outer area pale orange: an obscure subapical ocellus, brown: a variable subtornal ocellus, black: sometimes an obscure minute ocellus, above and almost touching subtornal ocellus, black: a narrow subterminal line, pale orange.

Beneath. Forewing pale grey-brown: an obscure minute subapical ocellus, brown. Hindwing pale grey-brown: an outer area cream: a subapical and a subtornal ocellus, black, each enclosed by a narrow silver line, and in line between them from one to four minute ocelli, silver: sometimes a minute black silver ringed ocellus, above and almost touching subtornal ocellus.

♀. Above as in male with often a faint orange suffusion on forewing: subterminal pale orange line of hindwing, broader and longer.

Beneath as in male but slightly paler.

Loc. Mackay 2 3 4 5 8 9 10 11. Eidsvold 2. Brisbane 4. Manning R. 3 10. Ourimbah 4. Sydney 1 2 3 4 5 8 9 10 11 12. Penrith 10. Blue Mts. 1 4. 57♂ 39♀.

This species though similar to *metirius* is easily separated by its paler colour and smaller ocelli and the additional minute ocelli of hindwing beneath. The pale orange area of hindwing above does not extend along area 6 towards base.

29. **Hypocysta aroa** Bethune-Baker. (New Guinea).

Proceedings Zoological Society London. 1908, p. 115, pl. 9, fig. 3.

Differs from *H. osyris* Boisduval, in the absence of a yellowish margin to ocelli of hindwing.

29a. **H. aroa angustata** nov. **Fig. 148, 149.**

♂. Above. Forewing brown-black with an obscure central area, whitish. Hindwing brown-black: a broad central area, white: an obscure subapical ocellus, black: an obscure twin-pupilled subtornal ocellus, black.

Toronto 4/17.

Richmond R. [illegible]. (SAW 22) Urunga (W) 10/20 Toronto

Beneath. Forewing dark brown: a well defined central area, white. Hindwing dark brown: a broad central area, white: a subapical and a twin-pupilled subtornal ocellus, black, narrowly edged yellow and each ringed by a silver line: a narrow subterminal line, silver.

♀. Above. Forewing brown-black: a central area reaching from dorsum to vein 3, white. Hindwing as in male: subtornal ocellus faintly ringed yellow-brown.

Beneath as in male: yellow margins of ocelli broader.

Loc. Claudie R. 11. Coen 10 11. 14♂ 1♀.

30. **Hypocysta adiante** Hubner.

There are two well defined races of this species.

30a. **H. adiante adiante** Hubner. **Fig. 88, 89.**

Zutrage Sammlung Exotischer Schmetterlinge, f. 545, 546, 1825.

♂. Above. Forewing orange with base and margins brown. Hindwing orange with margins brown: an obscure subapical ocellus, brown: a subtornal ocellus, black ringed brown: a narrow short subterminal line, orange.

Beneath. Forewing pale orange: costa apex and termen suffused grey. Hindwing pale orange suffused grey: a subapical and a subtornal ocellus, each enclosed by a silver line, and with a small silver ring midway between them: a narrow subterminal line, silver.

♀. Above as in male but paler and larger: subterminal orange line of hindwing broader and longer.

Beneath as in male.

Loc. Cape York 4 11. Thursday Is. 4. Prince of Wales Is. 5 6. Banks Is. 2 3. Claudie R. 1 11. Coen 11. Cooktown 10 11. Kuranda 1 2 3 6 7 10 11 12. Mackay 2 3 9 10 11. Brisbane 3 5. Stradbroke Is. 10 12. Port Macquarie 10. Sydney 1 2 3 4 5 9 10 11. 53♂ 37♀.

Examples from Cape York and the Torres Straits islands approach the next race.

30b. **H. adiante antirius** Butler. **Fig. 86, 87.**

British Museum Catalogue, Satyridae, p. 168, t. 4, f. 9, 1868.

♂. Above. Forewing orange-yellow with apex and termen narrowly brown. Hindwing orange-yellow: sometimes an obscure subtornal ocellus, brown.

Beneath. Forewing as above but paler: dark margins reduced to a narrow line. Hindwing as above but paler: a subapical and a subtornal ocellus, black, each enclosed by a narrow silver line, and with a minute silver spot midway between them: a narrow subterminal line, silver.

♀. Above and Beneath as in male: usually larger.

Loc. Daly R. 4. Darwin 5 6 8 9. Bathurst Is. Melville Is. 32♂ 17♀.

The ocelli of hindwing are usually only scaled beneath, but the membrane is so thin that they are visible above.

Genus **NESOXENICA** nov.

Antennae about half the length of costa, with clubs short, broad and abrupt. Eyes hairy. Forewing with vein 12 and median vein moderately, and vein 1a very slightly, swollen at base: vein 12 reaching costa beyond end of cell: vein 11 from subcostal at about fivesixths: vein 10 from subcostal just before end of cell: vein 5 longer than vein 6: discocellulars bent inwards: cell more than half the length of wing. Hindwing with vein 3 and vein 4 arising well apart: cell about half the length of wing.

Type. *Nesoxenica leprea* Hewitson, from Mt. Wellington, Tasmania.

This genus contains two races of a single narrow winged alpine species, very similar to *Oreixenica,* but at once separated by the hairy eyes. We have one aberrant example in which vein 6 of forewing arises from vein 7 well beyond end of cell.

31. **Nesoxenica leprea** Hewitson.

31a. **N. leprea leprea** Hewitson. **Fig. 131.**

Transactions Entomological Society London 1864, p. 249, pl. 16, f. 6, 7.

♂. Above. Forewing black: a central band, and a postcellular band from costa at threefourths to vein 3, cream: a series of small terminal spots, white. Hindwing black: a spot in cell and an irregular narrow discal band, cream: traces of a series of obscure subterminal ocelli, black: a series of small terminal spots, white.

Beneath. Forewing as above: sometimes traces of an incomplete series of obscure subterminal ocelli, black: two apical spots silvery white, and a series of narrow terminal streaks, white. Hindwing silvery white: a series of basal spots and an irregular narrow discal band, black: a narrow subterminal band, brown, with a series of six white-ringed blind ocelli, black: termen black with a series of irregular terminal streaks, silvery white.

♀. Above and Beneath as in male: central and postcellular bands tinged pale yellow.

Loc. Mt. Wellington 1 2 3 12. 16♂ 13♀.

31b. N. leprea elia nov. Fig. 132, 133.

♂. Above. Forewing black: a broad central band, and a broad postcellular band from costa at three-fourths to beyond vein 3, yellow-brown: a series of small terminal spots, white. Hindwing black: a spot in cell and an irregular discal band, yellow-brown: faint traces of a series of obscure subterminal ocelli, black: a series of small terminal spots, white.

Beneath. Forewing as above: two apical spots silvery white, and a series of narrow terminal streaks, white. Hindwing silvery white: a series of basal spots and an irregular narrow discal band, black: a narrow subterminal band, brown, with a series of six white-ringed blind ocelli, black: termen black with a series of irregular terminal streaks, silvery white.

♀. Above and Beneath as in male.

Loc. Mt. Dundas 2. Mt. Magnet 1 2 12. 21♂ 19♀. Cradle Mt. Tas. Jan 11th 1917 (R.J.T.)

Genus **HETERONYMPHA** Wallengren.

Ofversight Vetenskaps Akademiens Forhandlingar 1858, p. 79: Butler, Catalogue British Museum, Satyridae, p. 99, 1868.

Antennae less than half the length of costa, with clubs long, gradual and slender. Eyes hairy. Forewing with vein 12, median vein and vein 1a, swollen at base: vein 10 from subcostal just before end of cell: vein 5 shorter than vein 6: cell slightly more than half the length of wing and with lower margin much longer than upper margin. Hindwing with cell about half the length of wing in the male, and usually less than half the length of wing in the female. (**Fig. K.**)

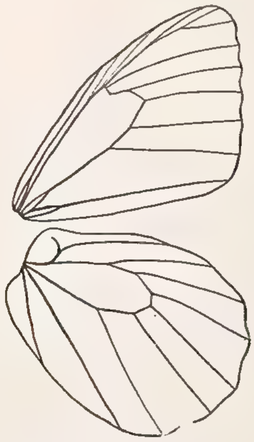

Fig. K. Wing venation of *Heteronympha merope*, male.

Type. *Heteronympha merope* Fabricius.

The largest butterflies of the group of this subfamily peculiar to Australia belong to this genus. The species are in many points structurally dissimilar, but they agree with the generic characters defined above, they have a general facies in the male, and the eyes are densely hairy. The sexes are similar in shape in *banksi, solandri, paradelpha* and *cordace*, less so in *philerope*, and very dissimilar in *merope* and *mirifica*. The females of *merope* and *mirifica* resemble each other in shape but the males differ considerably. The only species of the genus with a wide range is *merope*: the cell of the forewing is very narrow in *philerope*: the hindwing is elongate in *banksi*, and vein 11 and vein 10 arise from subcostal at almost the same point in male *banksi*. The males of *merope, philerope, banksi, solandri* and *paradelpha* have a sexmark on the forewing, and those of *mirifica* and *cordace* have not: the sexmark of *philerope* is intensely black and peculiarly prominent. The ocelli of the wings are blue-pupilled in *merope* and *cordace*, and white-pupilled in other species of the genus.

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Urunga (W) Oct 1920. Koscinsko (G.A.W.). Feb. 1920. Dec ♀ 21. Port Macquarie 3.4/18 Toronto 4/17 Stanwell Park April 16

32. **Heteronympha merope** Fabricius.

32a. **H. merope merope** Fabricius. **Fig. 90, 91, 92, 93, (ab. f. 100, 101).**

Systema Entomologiae, p. 495, 1775.

♂. Above. Forewing brown: cell dusted golden brown: a large spot at end of cell, golden brown: median vein broadly golden brown: an irregular postcellular band coalescing with an irregular subapical area, golden brown: area 1a broadly golden brown and extending as a very irregular subterminal band to area 4 and rarely to postcellular band: a large subapical ocellus, black: a series of raised patches of sexscales above and below median vein, grey-brown. Hindwing golden brown: costa and termen narrowly brown: an irregular subterminal line, broadest in area 4, brown: a faintly ringed large subtornal ocellus, black: a series of raised patches of sexscales just beyond cell, grey-brown.

Beneath. Forewing golden brown with apex yellow-brown: a spot in cell and a series of interrupted discal margins, brown-black: ocellus smaller than above and ringed. Hindwing yellow-brown: a central, a discal and a subterminal interrupted waved line, red-brown: subtornal ocellus as above but smaller: two minute ringed ocelli in areas 5 and 6, black.

♀. Above. Forewing brown-black with apex dusted yellowish grey: a large basal area reaching dorsum and almost reaching costa, golden brown: a broad postcellular band, and a subterminal spot in area 4, pale yellow: a large subterminal spot in areas 1a and 2 and often joined to the basal area, pale yellow: a large subapical ocellus, black faintly edged golden brown. Hindwing as in male: margins and subterminal line, brown-black: sexscales absent.

Beneath. Forewing as above with apex ashy brown: subapical ocellus smaller. Hindwing brown suffused ashy brown and often tinged red-brown: an obscure patch beyond cell, red-brown: a series of minute subterminal ocelli.

Loc. Gympie. Brisbane 10. Mt. Tambourine 12. Killarney 12. Richmond R. 10. Dorrigo 11 12. Ebor 1 12. Port Macquarie 10. Manning R. 3 10. Ourimbah 4. Sydney 1 2 3 10 11 12. Illawarra 2 12. Blue Mts. 1 2 3 11 12. Bowral 1. Pambula 12. Mt. Kosciusko 2. Mt. St. Bernard 2. French Is. Wandin 1 2 11 12. Melbourne 1 2 11 12. Gisborne 1 2 3 4 5 11 12. Castlemaine 1 3 4 11 12. Kerang. Dimboola 11. Adelaide 1 11 12. Balaklava 11. Kangaroo Is. 11. 33♂ 28♀.

In Transactions Entomological Society London 1895, Skuse described a melanic aberration of the female as *merope* v. *suffusa*: we have figured this specimen, and also a melanic aberration of the male.

32b. **H. merope salazar** Fruhstorfer.

Seitz' Macrolepidoptera, IX, p. 305.

♂. Above. Forewing dull brown: base of cell faintly dusted golden brown: a small spot at end of cell, and median vein, dull golden brown: postcellular band and subapical area as in typical *merope* but smaller and dull golden brown: area 1a narrowly dull golden brown and extending as a very irregular subterminal band to area 4: a large subapical ocellus, black: sexmark as in typical *merope*. Hindwing as in typical *merope* but dull golden brown and base brown: ocellus and patches of sexscales larger and darker.

Beneath as in typical *merope* but paler.

♀. Above. Forewing smoky black with apex dusted broadly yellowish grey: a large basal area reaching dorsum and almost reaching costa, dull golden brown with base dusted brown: a broad postcellular band, and a subterminal spot in area 4, yellow: a large subterminal spot in areas 1a and 2 and joined to the basal area, yellow: a large subapical ocellus, black edged golden brown. Hindwing as in male: base dusted brown: margins and subterminal line, black: sexscales absent.

Beneath as in typical *merope*, but paler.

Loc. Launceston 3 12. Burnie 3. Mt. Wellington 2 3. Flinders Is. 11. 16♂ 3♀.

This race differs from typical *merope* chiefly in the duller colouring and smaller golden brown markings.

32c. **H. merope duboulayi** Butler. **Fig. 94, 95.**

Annals Magazine Natural History 1867, p. 167.

♂. Above. Forewing brown-black: cell to threefourths and a spot at end of cell, bright golden brown: median vein broadly bright golden brown: postcellular band and subapical area as in typical *merope*, but bright golden brown: area 1a with subterminal extension usually reaching postcellular band, bright golden brown with a variable transverse streak near tornus, brown-black: a variable often small subapical ocellus, black: sexmark as in typical *merope*. Hindwing bright golden brown: costa and termen narrowly brown-black: an irregular subterminal line, broadest in area 4, brown-black: a faintly ringed large subtornal ocellus, black: patches of sexscales just beyond cell as in typical *merope*, but much less extensive.

Beneath as in typical *merope*: waved red-brown lines of hindwing broader.

♀. Above. Forewing black: a large basal area reaching dorsum and almost reaching costa, golden brown: a postcellular band and a large subterminal spot in area 2, pale yellow: a subterminal spot in area 4, white: an obscure subapical ocellus, black. Hindwing as in male: sexscales absent.

Beneath. Forewing as above, with apex ashy brown. Hindwing brown faintly suffused ashy brown and tinged red-brown: an obscure patch beyond cell, red-brown: a series of minute subterminal ocelli.

Loc. Albany. Wilson's Inlet 11 12. Bridgetown 1 2. Waroona 11 12. Perth 4 11 12. Capel R. 25♂ 23♀. Bunbury WA. 11.

The males of this race are much brighter than typical *merope*, and the spots of the female are much smaller, with that in area 4 of forewing white instead of pale yellow.

33. **Heteronympha mirifica** Butler. Fig. 96, 97.

Annals Magazine Natural History 1866, p. 286.

♂. Above. Forewing orange-brown: apex, termen and dorsum, narrowly and irregularly black: cell dusted brown-black: an irregular interrupted band across end of cell, and an obscure subapical ocellus, black. Hindwing orange-brown: a postcellular spot and an irregular subterminal line, black: a very faintly ringed subtornal ocellus, black.

Beneath. Forewing orange-brown with apex suffused red-brown: a spot in cell and a series of interrupted discal margins, brown-black: subapical ocellus minute. Hindwing brown with obscure paler areas and covered with minute striae, dark brown: a series of minute subterminal ocelli.

♀. Above. Forewing dull black with end of cell and apex, black: a broad postcellular band from costa at threefourths to just before tornus, cream: a subterminal spot in area 4, white: an obscure subapical ocellus, black. Hindwing dull black with termen shaded black: a large subtornal ocellus black ringed orange-brown.

Beneath. Forewing dull black suffused grey: end of cell and a subterminal patch in area 3, black: band and spot as above: subapical ocellus obscure and minute. Hindwing dull black suffused grey and covered with striae, black: a series of minute subterminal ocelli.

Loc. Maroochy 10. Killarney 12. Dorrigo 11. Manning R. 3. Ourimbah 4. Sydney 1 2 3 11 12. Illawarra 1 2 3 4 11 12. 37♂ 35♀. Port Macquarie 3.4/1918 Toronto 3.4.20

34. **Heteronympha banksi** Leach. Fig. 103, 104, 105.

Zoological Miscellany, 1, p. 28, pl. 10, fig. 1, 2, 1814.

♂. Above. Forewing brown-black: median vein narrowly golden brown: a spot at end of cell and a series of large discal spots with that in area 1a elongate, golden brown: a series of small obscure subapical spots, golden brown: a small obscure subapical ocellus, black, with a spot below it in area 4, pale golden brown: a series of raised patches of sexscales above and below median vein, brown-black. Hindwing brown-black: an illdefined spot at end of cell, a series of discal spots interrupted in area 4, and an incomplete series of small subterminal spots, golden brown: a ringed subtornal ocellus, black.

Beneath. Forewing brown-black: apex red-brown: base broadly pale golden brown: a large spot at end of cell and a series of large discal spots, pale golden brown: a minute ringed subapical ocellus, black, with a small spot below it in area 4, whitish. Hindwing yellow-brown covered with red-brown striae and often suffused purplish brown: traces of a central, a discal and a subterminal irregular interrupted waved line, red-brown: a small subapical and a small subtornal ringed ocellus, black.

♀. Above. Forewing as in male: median vein brown-black: golden brown spots larger and slightly paler: spot below ocellus in area 4, white: sexscales absent. Hindwing as in male: golden brown spots larger and slightly paler.

Beneath as in male.

Loc. Brisbane. Manning R. 3. Ourimbah 4. Sydney 3 4. Illawarra 3 4. Blue Mts. 3. Moruya 3. Loch 4. Wandin 3 4. 30♂ 30♀. Port Macquarie 3.4/1918 Toronto 3.4.20.

Richmond R. 10.

Kosciusko (GAH) July 1920.

35. **Heteronympha solandri** Waterhouse. **Fig. 106, 107, 108.**

Proceedings Linnean Society N. S. Wales 1904, p. 466.

♂. Above. Forewing brown-black: median vein obscurely golden brown: a spot at end of cell and a series of large discal spots, golden brown: a series of obscure subapical spots, golden brown: a very obscure small subapical ocellus, black, with a small spot below it in area 4, pale golden brown: a series of raised patches of sexscales above and below median vein, brown-black. Hindwing brown-black: a large spot at end of cell and a series of discal spots (usually a small one in area 4), golden brown: an incomplete series of small subterminal spots, golden brown: a ringed subtornal ocellus, black.

Beneath. Forewing brown-black: apex yellow-brown: base broadly pale golden brown: a large spot at end of cell, and a series of large discal spots, golden brown: an obscure minute ringed subapical ocellus, black, with a spot below it in area 4, white. Hindwing yellow-brown: traces of a central, a discal and a subterminal narrow interrupted waved line, red-brown: a minute subapical and subtornal ringed ocellus, outlined black.

♀. Above. Forewing as in male: median vein brown-black: golden brown spots much larger and paler: spot below ocellus, in area 4, white: sexscales absent. Hindwing as in male: golden brown spots much larger and paler.

Beneath as in male: ocelli outlined more faintly.

Loc. Blue Mts. 12. Mt. Kosciusko 1 2. Mt. Hotham 1. Mt. St. Bernard 1 2. Mt. Erica 2. Poowong 1. Lorne 2. 28♂ 25♀.

This species is separated from the very similar *banksi* by the narrower forewing and shorter hindwing, and by the absence of red-brown striae and purplish suffusions, beneath. It appears on the wing earlier in the season.

36. **Heteronympha paradelpha** Lower. **Fig. 109, 110, 111.**

Transactions Royal Society South Australia 1893, p. 146.

♂. Above. Forewing brown-black: median vein broadly golden brown: a spot at end of cell, a series of large discal spots, and a series of subapical spots, golden brown: a subapical ocellus, black, with a spot below it in area 4, golden brown: a raised patch of sexscales in cell close to median vein, brown-black. Hindwing brown-black: a spot at end of cell, a series of discal spots, and an incomplete series of subterminal spots, golden brown: a subtornal ocellus, black.

Beneath. Forewing brown-black: base broadly pale golden brown: apex faintly reddish brown: spots as above but larger and paler: ocellus as above but clearly defined in the paler apex. Hindwing yellow-brown: a basal, a discal, a subterminal and a terminal interrupted waved line, red-brown: a small subapical, and a subtornal ringed ocellus, black.

♀. Above. Forewing as in male: median vein very broadly golden brown: spots much larger and paler: sexscales absent. Hindwing as in male: spots much larger and paler.

Beneath as in male.

Loc. Ebor 1. Illawarra 3. Blue Mts. 3. Macedon 2. Wandin 2 3. Lorne 2 3. 16♂ 29♀

This species has neither the narrow forewing of *solandri,* nor the elongate hindwing of *banksi,* and the female is without the white spot of area 4 of forewing.

37. **Heteronympha philerope** Boisduval. **Fig. 112, 113, 114, (ab. f. 99, 116).**

Voyage Astrolabe, Lepidoptera, p. 147, 1832.

♂. Above. Forewing black: a spot in end of cell and reaching to discal spot in area 1a, and a spot in base of area 1a, orange-brown: a series of large discal spots, and a series of subapical spots, orange-brown: a subapical ocellus, black, with a spot below it in area 4, orange-brown: a large raised patch of sexscales in cell, black. Hindwing black: outer threefourths of cell, a series of large coalescent discal spots, and a series of subterminal spots, orange-brown: a subtornal ocellus and a variable sometimes minute subapical ocellus, black.

Beneath. Forewing black: apex dull orange-brown: base broadly golden brown: a large spot in end of cell and a discal series of large spots, golden brown: a faintly ringed subapical ocellus, black. Hindwing dull orange-brown: traces of a central, a discal, a subterminal and a terminal waved line, red-brown: a minute subapical and a minute subtornal ringed ocellus, black.

♀. Above. Forewing as in male: median vein broadly pale golden brown: spots pale golden brown, those in apex orange-brown: sexscales absent. Hindwing as in male: spots smaller, not so coalescent, and golden brown instead of orange-brown.

Beneath. Forewing as in male: base and spots pale golden brown. Hindwing as in male but paler and often tinged pink or lilac.

Loc. Ebor 12. Moss Vale 1. Mt. Kosciusko. 2. Wandin 3. Gisborne 1 2 3 4. Lorne 2 3. Mt. Magne 1. Launceston 3. Burnie 3. Hobart 2. 37♂ 36♀.

We have figured a melanic aberration of each sex of this species: the male is in the National Museum, Melbourne, and the female is a Gisborne example.

38. **Heteronympha cordace** Hubner. **Fig. 115, 117.**

Zutrage Sammlung Exotischer Schmetterlinge, fig. 797, 798, 1832.

♂. Above. Forewing black: a spot in base and a spot at end of cell, golden brown: a spot in base of area 2 and another in base of area 1a, golden brown: a series of large discal spots, and a series of subapical spots, golden brown: a subapical ocellus, black. Hindwing black: a spot in end of cell and a series of discal spots, golden brown: a subterminal spot in area 3 and another in area 4, golden brown: a large subtornal and a small subapical ringed ocellus, black.

Beneath. Forewing black: apex yellow-brown: base broadly golden brown: spots as above, those in apex whitish: ocellus as above. Hindwing greyish brown: spots as above but yellow: a complete series of coalescent subterminal spots, pale yellow: a large subapical and a large subtornal ringed ocellus, black, with two intermediate spots, bluish white.

♀. Above and Beneath as in male: spots larger and slightly paler: subtornal ocellus often larger.

Loc. Ebor 12. Blue Mts. 1. Moonbar 2. Mt. Kosciusko 1. 2. Poowong 1. Jindivick 1 12. Wandin. Macedon 1 2 3 12. Ballarat 1. Cressy 1. Zeehan 2. 47♂ 43♀.

This species differs in shape from the others of the genus and is smaller in size, but agrees with the generic definition. Specimens from Ebor are much darker than the average, with smaller pale spots, and subterminal spots of hindwing usually absent.

Genus **ARGYNNINA** Butler.

Annals Magazine Natural History 1867, XIX, p. 165.

Antennae about half the length of costa, with clubs short, broad and abrupt. Eyes densely hairy. Forewing with vein 12, median vein and vein 1a, swollen at base: vein 10 from subcostal just before end of cell: vein 5 much shorter than vein 6: cell more than half the length of wing. Hindwing with cell much more than half the length of wing: vein 3 and vein 4 arising well apart.

Type: *Argynnina hobartia* Westwood, from Tasmania.

We have revived Butler's name for these species, which are separated from *Xenica* by their densely hairy eyes, and from the other genera of the subfamily by the long cell of hindwing. The ocelli are white-pupilled.

39. **Argynnina hobartia** Westwood.

39a. **A. hobartia hobartia** Westwood. **Fig. 826.**

Genera Diurnal Lepidoptera, p. 387, 1851.

♂. Above. Forewing black: a spot in cell at onethird reaching into area 1a, a spot in cell at two thirds, and a series of large irregular discal spots, pale orange-yellow: a series of small obscure subapical spots, orange-yellow suffused red-brown: a row of three obscure ocelli in areas 3, 4 and 5, black. Hindwing black: a large spot in cell coalescing with discal spot near apex, a discal spot near tornus, and two small subterminal spots in areas 2 and 3, orange-yellow, with the discal and subterminal spots outwardly suffused red-brown: a row of three ocelli in areas 2, 3 and 4, black, that in area 2 prominent in the discal spot.

Beneath. Forewing as above but suffused red-brown. Hindwing red-brown dusted with short whitish hairs, and with pale spots as above but much obscured: a series of minute subterminal ocelli, black.

♀. Above and Beneath as in male: pale spots slightly larger.

Loc. Mt. Wellington 11. Karoola. Latrobe. Patersonia 1 11 12. 3♂ 7♀.

Cradle Mt Tas (R.J.T.) Jan 1917. Kosciusko (G.A.W.) Feby 1920. Mch 1920. worn [illegible]

Cradle Mt. Tas (R.J.T.) Jan 1917 Kosciusko (G.A.W.) Feb 1920. Dec 1-8. 1921. 4♂ 4200ft.

15 19
Kosciusko 1–8 Dec 1921.

39b. **A. hobartia cyrila** nov. **Fig. 129, 130, 832, 833.**

♂. Above. Forewing black: a spot in cell at onethird and another at twothirds, a series of large irregular discal spots, and a series of small sometimes obscure subapical spots, orange-yellow: a row of three obscure ocelli in areas 3, 4 and 5, black: a large raised patch of sexscales in area 1a and 2, black. Hindwing black: a large spot in cell coalescing with a discal spot near apex, a discal spot near tornus, and two small subterminal spots in areas 2 and 3, golden brown: a row of three ocelli in areas 2, 3 and 4, black, that in area 2 prominent in the discal spot.

Beneath. Forewing as above: spots paler with an extra one in base of area 1a: apex suffused red-brown. Hindwing red-brown, dusted with short whitish hairs, and with pale spots as above but much obscured: a series of minute subterminal ocelli, black.

♀. Above as in male: cell spot at onethird reaching into area 1a: sexscales absent.

Beneath as in male.

Loc. Narrabeen 10. Illawarra 11. Blue Mts. 10 11. Moruya 10. Mt. Arnold 11. Healesville 11. Wandin 10 11. Macedon 10 11. 36♂ 21♀.

Very similar to *hobartia* but larger and brighter, and at once separated by the raised patch of sexscales on forewing in the male.

40. **Argynnina tasmanica** Lyell. **Fig. 127, 128.**

Victorian Naturalist 1900, p. 110, fgd.

♂. Above. Forewing black: a spot in cell at onethird, another at twothirds, and a series of small irregular discal spots, pale cream: a series of small subapical spots, pale cream suffused red-brown: a row of three obscure ocelli in areas 3, 4 and 5, black. Hindwing black: a spot in cell, a series of discal spots, and two small subterminal spots in areas 2 and 3, pale cream: discal spots outwardly suffused reddish brown: a complete series of subterminal ocelli, black: basal hairs dense, long and greenish.

Beneath. Forewing as above, spots larger: apex red-brown. Hindwing red-brown with a broad curved central band, dark red-brown: spots as above but usually narrower and sometimes obscured.

♀. Above and Beneath as in male: spots slightly larger.

Loc. Strahan 10 11. Zeehan 10 11. 23♂ 70♀.

We have one aberrant female in which the cell spot of hindwing coalesces with the discal spot near apex, in the same way as in *hobartia* and *cyrila*.

Genus **OREIXENICA** nov.

Antennae about half the length of costa, with clubs short, broad and abrupt. Eyes smooth. Forewing with vein 12, median vein and vein 1a, swollen at base: vein 10 from subcostal before end of cell: vein 5 longer than vein 6: cell about half the length of wing. Hindwing with vein 3 and vein 4 arising well apart. **(Fig. L.)**

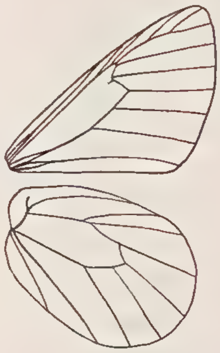


Fig. L. Wing venation of *Oreixenica lathoniella* (enlarged).

Type. *Oreixenica lathoniella* Westwood.

A genus of small alpine butterflies agreeing with *Hypocysta* in having the discocellulars of forewing sharply bent inwards, making vein 5 much longer than vein 6. The clubs of the antennae are much more sharply defined than in *Xenica*. *O. kershawi* differs from the other species of the genus in the clubs of antennae being less abrupt, the hindwing more elongate, and in the presence of a sexmark in the male. The wing ocelli of *kershawi* have the pupils bluish, while the ocelli of the other species of the genus are white-pupilled.

41. Oreixenica lathoniella Westwood.

This pretty little species has a wide range in southeastern Australia, and appears to be unusually susceptible to local influences, for it has developed no fewer than four races. Dr. Lucas described a fifth from Tasmania but, in the absence of his type of *paludosa*, we are unable to say whether this differs from the eastern Tasmanian race, which we consider typical *lathoniella*: Westwood's type probably came from the neighbourhood of Hobart.

41a. O. lathoniella lathoniella Westwood. Fig. 821, 822.

Genera Diurnal Lepidoptera, p. 387, 1851.

♂. ABOVE. Forewing black: a spot in cell at onethird extending to area 1a and reaching discal band, and a spot in cell at twothirds, golden brown: a band of irregular discal spots, and a band of small subapical spots reaching to vein 4, golden brown: a series of small sometimes obscure subterminal spots golden brown: a small subapical ocellus, black. Hindwing black: a series of triangular basal spots, golden brown: an uninterrupted discal band, a series of small subterminal spots, and an interrupted terminal line, golden brown: a ringed subtornal ocellus, black.

BENEATH. Forewing as above: apex dull red-brown: subterminal spots towards costa, silvery white. Hindwing as above but suffused dull red-brown: spots silvery white, excepting spot of discal band in area 4, golden brown: a ringed subapical and subtornal ocellus, black.

♀. ABOVE. Forewing as in male: extension of cell spot in area 1a, partially or wholly interrupted before reaching discal band. Hindwing as in male: triangular basal spots smaller.

BENEATH as in male.

LOC. Launceston. Burnie 3. Ulverstone. Hobart 2. Mt. Wellington 2 3. 8♂ 5♀.

Our few examples from Mt. Wellington are smaller and brighter than our other Tasmanian specimens.

41b. O. lathoniella herceus nov. Fig. 124, 125, 835.

♂. ABOVE as in typical *lathoniella*: pale spots brighter: discal band of hindwing narrower, interrupted at vein 4 and vein 5, and with spot in area 4 smaller.

BENEATH as in typical *lathoniella*.

♀. ABOVE. Forewing as in male: extension of cell spot in area 1a partially or wholly interrupted before reaching discal band. Hindwing as in male: triangular basal spots smaller.

BENEATH as in male.

LOC. Liverpool Plains (*Olliff*). Blue Mts. 3. Moss Vale 4. Mt. Kosciusko (below 4000ft) 3.2. Loch 4. Wandin 3. Gisborne 2 3 4. Macedon 3 4. Lorne 3. 54♂ 38♀.

The largest and brightest race of the species, with the most extended range. We have two female examples in which the discal band of forewing above is separated into small spots, being interrupted at vein 2 and vein 3 as well as at vein 4.

41c. O. lathoniella laranda nov. Fig. 126, 134, 834.

♂. ABOVE as in typical *lathoniella*: darker: pale spots brighter and much smaller : discal band of hindwing much narrower and sometimes interrupted at vein 4 and vein 5: basal spots much smaller.

BENEATH. Forewing as above: apex bright red-brown: subterminal spots and subapical spots near costa, silvery white. Hindwing bright red-brown: spots as above, narrow, silvery white excepting small spot of discal band in area 4, golden brown suffused red-brown.

♀. ABOVE. Forewing as in male: extension of cell spot in area 1a partially or wholly interrupted before reaching discal band. Hindwing as in male: triangular basal spots smaller.

BENEATH as in male.

LOC. Zeehan 3. Mt. Magnet 2. 39♂ 20♀.

A very much darker and handsomer race than typical *lathoniella*. Separated by the rich red-brown colour of hindwing beneath, and the much narrower and brighter silvery markings.

Kosciusko at ~~above~~ 5000 (G.A.W.) Feby 1920 Mch 1920 2♂ 1♀ at 5000 ft but plentiful at 4000 ft where ♀ very fresh (14-16 Mch).

Kosciusko (G.A.W.) Mch 14-16. 1920. "very plentiful at 5000 ft diminishing to 4500 none lower, only few at 6000" ft

Kosciusko Mch 14-16. 1920 (G.A.W.) 1 ♀ only. Dec 1-8 1921 (G.A.W.) plentiful but mostly ♂♂.

Kosciusko Mch 14-16. (G.A.W.) 3 ♀ only.

41d. **O. lathoniella latialis** nov. **Fig. 823, 824.**

♂. ABOVE. Forewing brown: pale spots as in typical *lathoniella* but smaller and duller, and discal band usually interrupted at veins 2, 3 and 4. Hindwing brown: pale spots as in typical *lathoniella* but duller and smaller: discal band broken up into spots.

BENEATH. Forewing as above: apex suffused reddish brown: spots larger and duller: subterminal spots near costa faintly silvery white: subapical ocellus large and black. Hindwing as above but suffused reddish brown: a series of basal spots, dull golden brown: discal band, excepting the spot in area 4, and subterminal spots, faintly silvery white: discal band not broken up into spots, but interrupted at vein 4 and vein 5: subapical and subtornal ocellus, large.

♀. ABOVE as in male, but much paler: pale spots tinged brown: extension of cell spot in area 1a of forewing always interrupted before reaching discal band.

BENEATH as in male.

LOC. Mt. Kosciusko (above 5000ft.) 2 3. 22♂ 11♀.

This race is much smaller and duller, and has somewhat narrower wings than *herceus* which occurs on the lower slopes of the same mountain. It does not appear on the wing till late in February, by which time *O. orichora* (with which it has hitherto been confused) has almost disappeared.

42. **Oreixenica orichora** Meyrick. **Fig. 118, 119, 836, 837.**

Entomological Monthly Magazine 1885, p. 82.

♂. ABOVE. Forewing brown-black: two large spots in cell, golden brown: a band of large irregular discal spots, those in areas 1a and 2 extending to cell, golden brown: a band of irregular subapical spots reaching to vein 3, and a series of small subterminl spots, golden brown: a small subapical ocellus, black. Hindwing brown-black: a series of small basal spots, a series of discal spots, and a series of small subterminal spots, golden brown: a faintly ringed subtornal ocellus, black.

BENEATH. Forewing as above: pale spots larger and obscured, and in apex whitish. Forewing grey-brown: spots as above but whitish: a ringed subapical and subtornal ocellus, black.

♀. ABOVE. Forewing as in male, but paler: spots of discal band smaller, and those of areas 1a and 2 interrupted before reaching cell. Hindwing as in male, but paler.

BENEATH as in male.

LOC. Mt. Kosciusko 1 2. 3 Mt. Hotham 2. 51♂ 59♀.

Cradle Mt. Tas. Dec. (Hardy) 11.Jan.1917 (RJT.)

This species is easily separated from all subspecies of *lathoniella* by the discal band of hindwing beneath being divided into small whitish spots. This band forms a large crescent-shaped silvery spot on basal side of both ocelli in *lathoniella* races and in female *correae,* but not in *orichora,* and these spots in *orichora* are whitish and not silvery. The golden brown margins of the ocelli are faintly tinged red-brown, especially in the female.

43. **Oreixenica correae** Olliff. **Fig. 120, 121, 122, 123, 827, 828.**

Proceedings Linnean Society N. S. Wales 1889, p. 621.

♂. ABOVE. Forewing black: two spots in cell and one below in area 1a, sometimes reaching discal spot in same area, golden brown: a series of irregular discal spots, and a band of small subapical spots reaching vein 3, golden brown: a series of small obscured subterminal spots, golden brown: a subapical ocellus, black. Hindwing black: a series of small basal spots and a series of irregular discal spots, golden brown: a series of small obscured subterminal spots, golden brown: a ringed subtornal ocellus, black.

BENEATH. Forewing as above but suffused reddish brown: spots as above but larger and obscured. Hindwing yellow-brown: spots as above but larger and very obscured: a ringed subapical and subtornal ocellus, black.

♀. ABOVE. Forewing as in male, but paler: subterminal spots less obscured. Hindwing as in male, but paler.

BENEATH. Forewing as in male. Hindwing as in male: discal and subterminal spots silvery white: basal spots more conspicuous.

LOC. Mt. Kosciusko 1 2 3. Mt. Hotham 2. Mt. St. Bernard 1 2. Mt. Erica 1 2. 48♂ 51♀.

A very abundant species at an elevation of about 5000ft. The sexes are easily recognised by the silvery spots present in female only: this sexual difference caused Olliff to describe the male as *correae* var. *fulva.* Specimens from Mt. St. Bernard are larger and more conspicuously marked beneath.

44. **Oreixenica kershawi** Miskin. **Fig. 139, 140, 829.**

Transactions Entomological Society London 1876, p. 452.

♂. Above. Forewing black: two spots in cell and one below in area 1a, golden brown: a series of four discal spots, and a series of small subapical spots reaching to vein 4, golden brown: an obscured subterminal line reaching to about vein 3, golden brown: a minute sometimes obscured subapical ocellus, black: a discal band of raised sexscales from vein 4 to vein 1a, brown-black. Hindwing black: a basal, a discal and a subterminal series of small irregular elongate spots, golden brown: a ringed subtornal ocellus, black.

Beneath. Forewing as above: apex suffused red-brown: a subterminal line to vein 3, and subapical spots near costa, silvery white. Hindwing red-brown: spots as above but larger and silvery white: a minute subapical and a small subtornal, ringed ocellus, black.

♀. Above and Beneath as in male: golden brown spots often larger: sexmark absent.

Loc. Liverpool Plains (*Olliff*). Mt. Kosciusko. Mt. St. Bernard 2. Mt. Erica 1 2. Loch 4. Wandin 2 3. Lorne 2. 40♂ 16♀.

Easily recognised by the elongate hindwing, the slender antennae and the sexmark of male. Olliff described a variety of this species from Liverpool Plains as *Xenica ella*: the type has been lost, but the description was a careful one, and we have no doubt of our determination.

Genus **XENICA** Westwood.

Genera Diurnal Lepidoptera, p. 387, 1851.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 12 slightly, and median vein and vein 1a moderately, swollen at base: vein 10 from subcostal before end of cell: vein 5 shorter than vein 6: cell about half the length of wing. Hindwing with vein 3 and vein 4 arising well apart. Males with a linear sexmark on forewing above. Ocelli white-pupilled.

Type. *Xenica acantha* Donovan.

We have restricted this genus to three species: those we have placed under *Nesoxenica* and *Argynnina* are separated by their hairy eyes, and the small narrow winged species under *Oreixenica* have the discocellulars of forewing bent inwards, making vein 5 longer than vein 6.

45. **Xenica acantha** Donovan. **Fig. 135, 136.**

Insects New Holland, pl. 22, fig. 2, 1805.

♂. Above. Forewing brown: cell orange with a narrow bar at threefourths and another at fourfifths, brown: a series of irregular discal spots, that in area 1a reaching to base, orange: a series of irregular subapical spots, and a subterminal line, orange: a faintly ringed subapical ocellus, black: a raised bar of sexscales from lower apex of cell to vein 1a at onethird, brown-black. Hindwing orange: cell veins faintly brown: an irregular waved subterminal line, brown: termen narrowly brown with a central broad line, orange: a ringed subtornal ocellus and an obscured blind subapical ocellus, black.

Beneath. Forewing as above: subapical spots much paler. Hindwing cream: a series of basal spots and a central interrupted band obscurely and broadly outlined brown: subterminal line and termen as above: a ringed subapical and subtornal ocellus, black.

♀. Above and Beneath as in male: sexmark absent.

Loc. Brisbane 3 4 10 11. Mt. Tambourine 12. Killarney 12. Ebor 12. Manning R. 3. Sydney 1 2 10 11 12. Blue Mts. 1 11 12. Jindivick 12. Wandin 1 3 12. Harrietville 2. Gisborne 1 2 3. Adelaide 1 12. 30♂ 22♀. Port Macquarie 3.4/1918

Southern specimens have the hindwing beneath, pale yellow instead of cream.

46. **Xenica klugi** Guerin. **Fig. 137, 138, 825.**

Voyage Coquille, Insects, pl. 17, fig. 2, 1829.

♂. Above. Forewing brown-black: cell dull golden brown with a spot at threefourths and another on discocellulars, brown-black: a series of irregular discal spots, that in area 1a reaching to base but not to dorsum, dull golden brown: a series of irregular subapical spots, dull golden brown: a subapical ocellus, black: a raised bar of sexscales from lower apex of cell to vein 1a at half, brown-

X. KERSHAWI ELLA Barrington Tops N.S.W. Hopson Jan 1921. Goldfinch Dec 1921

Toronto 4/17

[illegible]

[illegible] of costs, with following preliminary [illegible] particularly, [illegible]

[illegible] small narrow [illegible]

[illegible]

Mt Kosciusko GAW, Feb. 1920 Mch 1920.

black. Hindwing dull golden brown: an irregular spot on discocellulars, brown: an irregular waved line, brown-black: termen narrowly brown-black with sometimes traces of a narrow central line, dull golden brown.

Beneath. Forewing as above: apex ashy grey: subapical ocellus ringed: sexmark absent. Hindwing grey covered with fine striae, brown: traces of an obscure central band, brown-black: ocelli as above but very minute.

♀. Above and Beneath as in male, but paler: sexmark absent.

Loc. Killarney 12. Ebor 1. Blue Mts. 1 3 11 12. Colo Vale 1 2. Pambula 12. Mt. Kosciusko 1. 2. Mt. St. Bernard 1 2. Wandin 1 3 12. Gisborne 1 2 3 4 12. Castlemaine 1 12. Launceston 12. Hobart 2. Zeehan 2. Adelaide 1 11 12. Balaklava 11. Port Victor 12. Kangaroo Is. 11. Wilson's Inlet 1 12. Bridgetown 2 11. Waroona 1 11 12. Perth 11 12. Cunderdin 10 11. Geraldton 11. Capel R. 54♂ 21♀.

This butterfly is the most abundant Satyrid in southern Australia: it has an exceedingly wide range, but shows no tendency towards geographical races.

47. **Xenica minyas** nov. **Fig. 819, 820.**

♂. Above. Forewing brown-black: cell yellow-brown with a narrow spot at threefourths and another on discocellulars, brown-black: a series of irregular discal spots, that in area 1a reaching base and dorsum, yellow-brown: a series of obscure and irregular subapical spots, yellow-brown: a subapical ocellus, black: a narrow raised bar of sexscales from lower apex of cell to dorsum at half, brown-black. Hindwing yellow-brown: an irregular spot on discocellulars, brown: an irregular waved subterminal line, brown-black: termen narrowly brown-black with faint traces of a narrow central line, yellow-brown.

Beneath. Forewing as above: apex narrowly grey: subapical ocellus faintly ringed: sexmark absent. Hindwing pale yellow-brown suffused brown: traces of an obscure central band, brown-black: ocelli as above but very minute.

♀. Above and Beneath as in male, but paler: sexmark absent.

Loc. Wilson's Inlet 10 11. Stirling Ranges 10. Yallingup 10 11. Bridgetown 11. Waroona 10 11. Perth 9 10. Capel R. 10♂ 6♀.

We had considered this a dwarf desert form of *klugi*, but have recently received both *klugi* and *minyas* from the same localities. This species appears on the wing a month to sixweeks earlier than *klugi*, and may be recognised by its smaller size, pale colouring, and the yellow-brown dorsum of forewing above. In proportion to its size its paler markings are much more extensive.

Genus **TISIPHONE** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 60, 1816.

Antennae less than half the length of costa, with clubs long, gradual and very slender. Eyes smooth. Forewing with vein 12 slightly and median vein and vein 1a moderately, swollen at base: vein 10 from subcostal close to end of cell: vein 6 longer than vein 5: cell more than half the length of wing. Hindwing with vein 3 and vein 4 arising well apart: cell about half the length of wing. (Fig. M.)

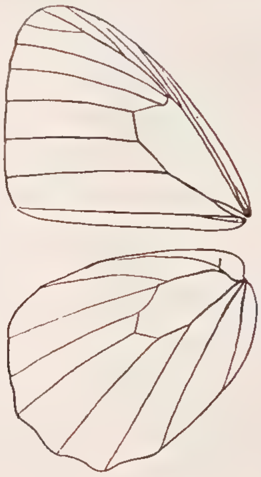


Fig. M. Wing venation of *Tisiphone abeona.*

Type. *Tisiphone abeona* Donovan.

The name *Tisiphone* has been wrongly applied to a South American genus of Satyrids, for which Kirby has lately defined the genus *Manataria*: *Tisiphone* is confined to Australia.

The handsome butterflies of this genus are all closely allied: they are feeble fliers and very local in their habits, never wandering any distance from their foodplant. Many localities along the eastern coastal ranges and rivers are yet unexplored, and search will probably discover intermediate races.

48. **Tisiphone abeona** Donovan.

We regard the following five subspecies as geographical races of *abeona*: their early stages, so far as known, are identical. The southern race *albifascia* has broad white bands beneath and a broad orange area across cell of forewing above: these are present but reduced in size in *abeona*. The third race *joanna* has a very prominent subtornal ocellus on hindwing, and is strikingly variable: *morrisi* has the white bands beneath much broader: in the most northern race, *rawnsleyi*, these have diminished in size so much as almost to have disappeared, but always show traces both above and beneath. The wing ocelli of all five races are blue-centred with a whitish pupil.

48a. **T. abeona albifascia** Waterhouse. **Fig. 816.**

Proceedings Linnean Society N. S. Wales 1904, p. 468.

♂. Above. Forewing rich dark brown: a broad central area from subcostal at half to tornus, orange with costal portion paler: a broad postcellular bar, orange with costal portion paler: a subapical ocellus and a large ocellus in area 2, black. Hindwing rich dark brown: sometimes traces of faint discal lines, whitish: an obscure subapical and a large subtornal ringed ocellus, black margined dull red.

Beneath. Forewing dark brown: markings as above but much paler: ocelli as above. Hindwing dark brown: a broad discal band, white, and a double subterminal line, cream: ocelli as above, that in apex not obscured.

♀. Above and Beneath as in male: bands broader and paler.

Loc. Pambula 12. Eden 12. Jindivick 1 12. Wandin 2 3 10 11 12. Healesville 11. Macedon 1 2 3 11 12. Lorne 3 12. 25♂ 25♀. Moe V. 11.12/1919.

48b. **T. abeona abeona** Donovan. **Fig. 75, 76, 815.**

Insects New Holland, pl. 22, f. 1, 1805.

♂. Above. Forewing rich dark brown: a broad central area from subcostal at half to tornus, orange: a narrow postcellular bar, orange: a subapical ocellus, and a large ocellus in area 2, black. Hindwing rich dark brown: an obscure subapical and a large subtornal ringed ocellus, black margined dull red.

Beneath. Forewing dark brown: markings as above but paler: ocelli as above. Hindwing dark brown: a narrow discal band, white, and traces of a double subterminal line, cream: ocelli as above, that in apex not obscured.

♀. Above and Beneath as in male: bands broader and paler.

Loc. Newcastle. Ourimbah 4. Sydney 1 2 3 4 9 10 11 12. Illawarra 2. Blue Mts. 1 3 10 11 12. 23♂ 19♀.

48c. **T. abeona joanna** Butler. **Fig. 102, 794-814, 818.**

Annals Magazine Natural History 1866, p. 286: *l.c.* 1867, pl. 4, f. 8: Waterhouse, Australian Zoologist 1914, p. 15, figured.

♂. Above. Forewing dark brown: a bar near end of cell and a narrow postcellular bar, obscurely cream: a subtornal patch, cream: a small subapical ocellus, and a large ocellus in area 2, black. Hindwing dark brown: an obscured discal line, cream: a subapical and a subtornal ringed ocellus, black margined orange-red.

Beneath. Forewing dull dark brown: a bar near end of cell and a narrow discal band, cream: ocelli as above, but margined cream. Hindwing dull dark brown: a discal band and a double subterminal line, cream: ocelli as above.

The above description and **fig. 102** are taken from a coloured drawing of the type in the British Museum. This type has no definite locality, but we have lately captured a long series at Port Macquarie, which includes specimens that agree closely with the type and others that differ widely from it. The series is so variable that a description in general terms is almost impossible, so instead we give

Stanwell Park Oct 1916. Toronto 4/17.

[illegible]

[illegible] with costal [illegible]

[illegible] fringed edges, [illegible]

[illegible]

sufficient coloured figures to show the limits of the race: orange banded examples can always be recognised from *abeona* by the more prominent ringed subtornal ocellus of hindwing above: examples approaching *morrisi* have the white band of hindwing above narrower.

Loc. Port Macquarie 2 3 10 11. Camden Haven 10. Coopernook 10. Tuncurry 4 5. Port Stephens 3. 103♂ 31♀. Port Macquarie 3/4/1918.

48d. T. abeona morrisi Waterhouse. Fig. 77, 78, 817.

Australian Zoologist 1914, p. 16, pl. 1, fig. 19, 24, 25.

♂. Above. Forewing dark brown: a narrow postcellular bar and a subtornal patch, white: a subapical ocellus and a large ocellus in area 2, black faintly margined white. Hindwing dark brown: a broad irregular discal band, white: a subapical and a large subtornal ringed ocellus, black margined dull orange-red.

Beneath. Forewing dull dark brown: a bar near end of cell, a narrow postcellular bar and a subtornal patch, white: traces of a double subterminal line, white: ocelli as above. Hindwing dull dark brown: discal band and ocelli as above: traces of a double subterminal line, white.

♀. Above as in male: subtornal patch much broader: sometimes traces of a double subterminal line, white.

Beneath as in male: white markings broader: double subterminal line much clearer.

Loc. Southport 12. Richmond R. 1 2 3 4 9 10. Dorrigo 12. Ebor 1. 27♂ 26♀. Urunga (W) Oct 1920.

48e. T. abeona rawnsleyi Miskin. Fig. 82, 83.

Transactions Entomological Society London 1876, p. 454.

♂. Above. Forewing dark brown: sometimes traces of a narrow postcellular bar and subtornal patch, white: a subapical ocellus, and a large ocellus in area 2, black. Hindwing dark brown: traces of an obscure irregular discal band, white: a subapical and a large subtornal ringed ocellus, black margined dull orange-red.

Beneath. Forewing dull dark brown: an obscure bar near end of cell, white: traces of a narrow postcellular bar, a subtornal patch, and a double subterminal line, whitish: ocelli as above. Hindwing dull dark brown: a narrow discal band and an obscure double subterminal line, white: ocelli as above.

♀. Above and Beneath as in male: white markings broader: ocelli larger.

Loc. Maroochy 1 3 10. Caloundra 10. 7♂ 5♀.

49. Tisiphone helena Olliff. Fig. 84, 85.

Proceedings Linnean Society N. S. Wales 1888, p. 395.

♂. Above. Forewing brown suffused golden brown: a broad discal area from costa at twothirds to tornus, pale yellow shading to golden brown: apex, termen, and basal edge of discal band to vein 2, dark brown: a white-pupilled subapical ocellus, and a large white-pupilled ocellus in area 2, black. Hindwing brown: termen lined dark brown: a subapical ocellus, black, and a white-pupilled subtornal ocellus, black narrowly margined golden brown.

Beneath. Forewing as above but paler: a bar across cell at twothirds, and margins of discal area to vein 2, dark brown: termen lined dark brown: ocelli as above. Hindwing brown: a basal, a discal, and a double subterminal line, red-brown: a large subapical and a subtornal ringed ocellus, black narrowly margined golden brown.

♀. Above and Beneath as in male: usually larger.

Loc. Mt. Bellenden-Ker (type). Kuranda 1 2 3 9 11 12. Herberton 12. 22♂ 18♀.

Subfamily ELYMNIINAE.

Ovum. Nearly as wide as high: globular: translucent: obscurely facetted.

Larva. Body smooth: tail forked: head with spines.

Pupa. Head and thorax flattened: tuberculate.

Imago. Of moderate size, with wings rather broad and short: wing cells closed: vein 12 of forewing swollen at base: hindwing with a precostal cell.

Range. Throughout the Indo-Australian Region, with a few species in Africa.

This subfamily contains one genus only. It shows relationship to the *Satyrinae* in the swollen costal vein, and to the *Papilionidae* in the presence of the precostal cell.

Genus ELYMNIAS Hubner.

Verzeichniss bekannter Schmetterlinge, p. 37, 1816.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal at about twothirds: vein 10 from subcostal near end of cell: vein 6 from apex of cell close to vein 7. Hindwing with vein 3 and vein 4 from lower apex of cell. The sex-mark of the male consists of a pencil of long hairs in the cell of hindwing above. **(Fig. N.)**.

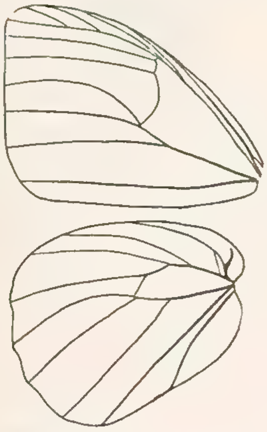


Fig. N. Wing venation of *Elymnias australiana*, male.

Type. *Elymnias undularis* Drury, from India.

50. **Elymnias agondas** Boisduval. (New Guinea).

50a. **E. agondas australiana** Fruhstorfer. **Fig. 9, 567.**

Stettiner Entomologische Zeitung 1899, p. 339.

♂. Above. Forewing blue-black: a subterminal band of spots, white, edged blue. Hindwing blue-black: a broad discal area, white edged blue: sometimes two obscure subterminal ocelli in areas 1a and 2, black: a pencil of long hairs in cell close to subcostal, black.

Beneath. Forewing dark brown: spots as above but not edged blue. Hindwing dark brown: discal area as above but not edged blue: a subtornal patch, orange-brown: two large subterminal ocelli in areas 1a and 2, black, that in area 1a twin-pupilled.

♀. Above. Forewing black: a large discal area, with veins black, white edged blue. Hindwing black: a large central area reaching dorsum, silky white: a subterminal series of three obscure blue pupilled ocelli, in areas 1a, 2 and 3, black.

Beneath. Forewing dark brown: discal area as above but reaching costa and tornus. Hindwing dark brown: a large central area, white: a subtornal patch, orange-brown: ocelli as above but larger and clearer, that in area 1a twin-pupilled.

Loc. Cape York 3 4 5 7 10 11 12. Claudie R. 1. 33♂ 16♀.

The apex and termen of forewing are more rounded in the male than shown in **figure 9**: this was drawn from a defective specimen, which at the time was the only one available.

Subfamily AMATHUSIINAE.

Ovum. Of greater width than height: spherical: smooth.

Larva. Cylindrical: hairy: tail forked: head bifid: gregarious: feeds upon palms.

Pupa. Long: boat-shaped: head with two moderate hornlike processes.

Imago. Of large size, with wings broad and rounded. Forewing with cell closed: vein 10 from vein 7 well beyond cell. Hindwing with cell open: vein 1b present.

Range. Throughout the tropical portions of the Indo-Australian Region.

Early writers considered this subfamily an Oriental division of the South American *Morphinae*, but Stichel in his Monograph in the Genera Insectorum (1905) treats it as a separate subfamily. Many of the species emit a strong scent. In some Indian genera, vein 12 anastomoses with vein 11, and vein 11 with vein 10.

Genus **TAENARIS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 53, 1816.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal before end of cell: vein 10, vein 9, and vein 8, arising close together from vein 7: cell closed: lower edge of cell very much longer than upper edge: dorsum near base, and vein 1a near base, bowed downwards in the male. Hindwing with cell open: termen evenly rounded. The sexmarks of the male consist of a pencil of long hairs near base of hindwing above, directed towards costa and partly hidden by the dorsal lobe of forewing: and a patch of long hairs close to vein 1b near tornus of hindwing above.

Type. *Taenaris urania* Linne, from the Moluccas.

This genus has its head quarters in New Guinea, but ranges from the southern end of the Malay Peninsula to the Solomons. All the species of the genus have a common facies, and most of them two large round dark ocelli on hindwing beneath.

51. **Taenaris artemis** Snellen van Vollenhoven. (New Guinea).

51a. **T. artemis jamesi** Butler. **Fig. 790.**

Proceedings Zoological Society London 1876, p. 767, pl. 77, fig. 4.

♂. Above. Forewing usually grey, with a broad streak (not reaching costa nor extending below vein 3) from just within cell to termen, white: sometimes white, with costa, apex and tornus, grey: tornal grey margin sometimes reduced to a few scales: basal portion of dorsal area, yellow-brown: vein 1a strongly bowed, and dorsum distinctly lobed near base. Hindwing white, with variable marginal areas, grey: basal portion of dorsal area, usually to vein 2 but sometimes extending into cell, yellow: a small variable ocellus in area 2, black centred bluish, narrowly margined yellow, and sometimes ringed dark grey: subapical ocellus of undersurface visible: a patch of long hairs between vein 1a and vein 2, yellowish: a pencil of strong hairs just below median near base, dark brown: a bunch of hairs (not set in a black area) in area 1b near tornus, light brown.

Beneath. Forewing as above: yellow dorsal scales absent. Hindwing as above: a subapical and a subtornal large white-pupilled ocellus, black margined yellow and ringed dark grey: centre of subtornal ocellus distant from termen onethird the length of vein 3.

♀. Above and Beneath as in male: grey areas darker: dorsum of forewing straight: sexmarks absent.

Loc. Darnley Is. 4 5 12. 9♂ 2♀.

This species was described from Yule Is., which is no great distance from our locality.

52. **Taenaris catops** Westwood. **Fig. 781.**

Genera Diurnal Lepidoptera, p. 335, 1851.

♀. Above. Forewing white: costa narrowly dark grey. Hindwing white: base of cell and of area 1a with long hairs, yellow: ocelli of undersurface visible.

Beneath. Forewing as above. Hindwing white: costa narrowly dark grey: dorsal area faintly yellow: a subapical and a subtornal large white pupilled ocellus, black margined yellow and ringed dark grey: centre of subtornal ocellus distant from termen one half the length of vein 3.

Loc. Darnley Is. 5. 2♀.

We have only the one sex from within Australian limits. Our males of *catops* from the Aru Is. show a bunch of light brown hairs, set in a small black area, in area 1b of hindwing above near tornus. The forewing is distinctly shorter than in *artemis jamesi* but the clearest point of distinction is the distance of the subtornal ocellus from the termen. When longer Australian series are available, and the subfamily is again monographed, this form will no doubt receive a name as a subspecies.

Subfamily **NYMPHALINAE.**

Ovum. Very variable in form: usually both horizontally and vertically ribbed.

Larva. Subcylindrical: spiny or with fleshy prominences (except *Eulepis*): rarely gregarious: feeds upon low-growing plants and shrubs, and often forsakes the foodplant to pupate. (**Fig. L36, L41**).

Pupa. Angular: often grotesquely angular: (in *Eulepis* smooth and rounded): often with brilliant metallic markings: suspended by the tail. (**Fig. P36**).

IMAGO. Usually of moderate or large size: rarely small: wings broad, sometimes angulate: wing cells usually open but sometimes closed by weak discocellulars. Forewing with twelve veins: vein 10 usually from subcostal but sometimes from vein 7. Hindwing with dorsum channelled to receive abdomen. Antennae with clubs sometimes gradual and slender, and sometimes abrupt and broad: eyes sometimes smooth and sometimes hairy: palpi large, broad and rounded. The butterflies are usually of strong swift flight and delight in the hottest sunshine. Many of them have peculiar tastes, being attracted by exuding sap, decomposing fruit, carrion, etc.

RANGE. Worldwide.

This subfamily contains the typical butterflies of the *Nymphalidae.* It is separated from the *Danainae* by the absence of the anal tufts of the male: from the *Elymniinae* by the absence of the precostal cell of hindwing: from the *Amathusiinae* by the broad and rounded palpi: from the *Acraeinae* by the channelling of the hindwing: and from the *Satyrinae* by the absence of the basal enlargement of veins.

It is naturally divided into two main sections by the larvae: the section with smooth larvae, which is represented in Australia by *Eulepis pyrrhus sempronius* only, has by some writers been given the rank of a distinct subfamily under the name of the *Apaturinae.* Above and beneath the wings are usually widely divergent and, unlike other subfamilies, there is no definite scheme of wing pattern by which it may be divided into sections. None of the genera contain (in Australia) more than a few species, *Hypolimnas* with four having the greatest number. The venation shows very considerable divergence: in some genera the cells are feebly closed: in others the cell of forewing is closed and the cell of hindwing open: but in the majority of the species both cells are open.

The key to the genera is chiefly based on the points of origin of vein 10 and vein 11.

Key to the Genera of *NYMPHALINAE.*

A. Cell of forewing and of hindwing closed.
a. Eyes hairy .... *Pyrameis.*
b. Eyes smooth.
a^1. Forewing with vein 11 and vein 10 from subcostal.
a^2. Hindwing with vein 3 and vein 4 from almost the same point.
a^3. Hindwing with cell about half length of wing and closed: median vein of forewing with basal spur .... *Argynnis.*
b^3. Hindwing with cell much less than half length of wing and closed: median vein of forewing without basal spur .... *Hypolimnas.*
b^2. Hindwing with vein 3 and vein 4 stalked .... *Yoma.*
b^1. Forewing with vein 11 from subcostal and vein 10 from vein 7.
a^2. Hindwing with cell closed by a fold of the membrane .... *Cynthia.*
b^2. Hindwing with cell closed by a weak discocellular vein.
a^3. Hindwing with termen rounded .... *Atella.*
b^3. Hindwing with termen strongly toothed at vein 4 .... *Issoria.*
c^3. Hindwing with termen strongly toothed at each vein .... *Cethosia.*

B. Cell of forewing closed, but cell of hindwing open.
a. Eyes smooth.
a^1. Forewing with costa serrated: vein 10 from subcostal .... *Eulepis.*
b^1. Forewing with costa smooth: vein 10 from vein 7 .... *Cupha.*
b. Eyes hairy .... *Mynes.*

C. Cell of forewing and of hindwing open: eyes smooth.
a. Forewing with vein 11 and vein 10 from subcostal.
a^1. Antennae with clubs short, abrupt and broad .... *Precis.*
b^1. Antennae with clubs long, gradual and slender.
a^2. Hindwing with termen tailed at vein 1a .... *Doleschallia.*
b^2. Hindwing with termen rounded.
a^3. Forewing with vein 10 from subcostal just before end of cell .... *Phaedyma.*
b^3. Forewing with vein 10 from subcostal well before end of cell .... *Neptis.*
b. Forewing with vein 11 from subcostal and vein 10 from vein 7.
a^1. Forewing with vein 10 from vein 7 well beyond end of cell: with a sexmark in male *Rahinda.*
b^1. Forewing with vein 10 from vein 7 just beyond end of cell: without a sexmark in male .... *Acca.*

[illegible]

[illegible] Many of them [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Richmond R. 29.10. Port Macquarie 3.4/1913 _ Toronto 4/17.

Genus **EULEPIS** Moore.

Lepidoptera of Ceylon, 1, p. 29, 1880: Rothschild & Jordan, Novitates Zoologicae, V, 1898, p. 562.

Antennae less than half the length of costa, with clubs long and gradual. Eyes smooth. Forewing with costa serrated: vein 11 from subcostal well before end of cell: vein 10 from subcostal before end of cell: vein 9 from vein 7 just beyond end of cell: cell less than half the length of wing and closed, with upper and lower edges of about equal length. Hindwing with cell open: termen with vein 2 and vein 4 produced to short pointed tails. (**Fig. D.**)

TYPE. *Eulepis athamas* Drury, from India.

This genus agrees with *Charaxes* in having the costa of forewing serrated, but differs in having the cell of hindwing open. It is separated from all other Australian Nymphalids by the pupa and larva: these are smooth and the head of the larva has long hard hornlike processes.

53. **Eulepis pyrrhus** Linne. (Amboina).

This handsome species extends as far to the eastward as Fiji.

53a. **E. pyrrhus sempronius** Fabricius. **Fig. 41.**

Entomologia Systematica, iii, p. 62, 1793.

♂. ABOVE. Forewing creamy white: apical half, extending to tornus, black: costa narrowly brown: two large discal spots near costa, and a complete series of subterminal spots, creamy white: dark markings of cell and base beneath, visible. Hindwing creamy white: termen broadly black: a series of small subterminal spots, creamy white: an irregular broad terminal line extending along tails and narrowly interrupted at veins, greenish: a small tornal patch, orange: dark markings beneath, visible.

BENEATH. Forewing white: base, apex and termen, brown: a bar across cell, black, and a bar at end of cell, brown edged black: discal spots as above, but basally edged black: an irregular curved line from costa at fourfifths to tornus, black outwardly edged silvery white: subterminal spots as above, but white and covered with a thinly scaled band, silky white. Hindwing brown: dorsum yellow-brown: a broad central area from costa diminishing to a point before reaching vein 2, white: a series of irregular transverse lines, black, that nearest termen outwardly edged white, and that crossing cell basally edged white: three crescent shaped spots from tornus to vein 4 at half, red-brown outwardly edged black: a series of subterminal spots, black basally edged silky white: terminal line as above, but much broader and orange-brown.

♀. ABOVE and BENEATH as in male: often much larger.

LOC. Cape York 3. Thursday Is. Cairns 7 10 11. Kuranda 4 11. Ingham 4 5 9. Mackay. Brisbane 1 4 5. Richmond R. 1 4. Manning R. 3. Tuncurry 1. Sydney 1 2 3 4 10. Darwin 8. Roper R. 11. 19♂ 14♀.

We have often taken this butterfly feeding on the juices exuded by shrubs: the late Mr. G. Masters once found several examples round the leaking bunghole of a wine barrel: when in this semi-intoxicated condition it is easily captured; at other times it is of exceptionally strong and rapid flight.

Genus **PHAEDYMA** Felder.

Ein Neues Lepidopteron, p. 31, 1861.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal well before end of cell: vein 10 from subcostal just before end of cell: cell less than half the length of wing and open. Hindwing with cell open and termen rounded. Sexmark of male consists of a silky grey area on dorsum of forewing beneath, and a corresponding but smaller and fainter area on costa of hindwing above.

TYPE. *Phaedyma amphiona* Linne, from Amboina.

54. **Phaedyma shepherdi** Moore.

This species rests with wings outspread, and has a slow gliding flight with only an occasional flap of the wings. The two Australian races are easily separated by the width of the pale band of the hindwing.

54a. **P. shepherdi shepherdi** Moore. **Fig. 58.**

Proceedings Entomological Society London 1858, p. 8, pl. 50. fig. 1.

♂. ABOVE. Forewing black: a streak in cell and a postcellular spot, white: a series of large irregular discal spots, and an incomplete series of small elongate subterminal spots, white. Hindwing black: a narrow central band, and faint traces of a series of subterminal dots, white.

Beneath. Forewing pale brown: a terminal patch between vein 3 and vein 5, dark brown: costa at base, orange: cell streak and spots as above: a series of interrupted terminal lines, white. Hindwing pale brown: a terminal patch between vein 3 and vein 5, dark brown: costa at base, white: a narrow central band and a series of interrupted terminal lines, white.

♀. Above. Forewing as in male: cell streak obscured towards base: postcellular spot smaller: subterminal spots larger. Hindwing as in male.

Beneath as in male: terminal whitish lines broader.

Loc. Mackay 2 3 4 9. Brisbane 1 2 4 5 9 10 12. Mt. Tambourine 12. Richmond R. 1 3. 4.9.10. Manning R. 3. 26♂ 17♀.

54b. **P. shepherdi latifasciata** Butler.

Transactions Entomological Society London 1875, p. 4.

♂. Above. Forewing black: a streak in cell and a postcellular spot, white tinged greenish: a series of large irregular discal spots, and a series of small elongate subterminal spots, white tinged greenish. Hindwing black: a broad central band, white tinged greenish: faint traces of a series of subterminal dots, white.

Beneath. Forewing pale brown: a terminal patch between vein 3 and vein 5, dark brown: costa at base, orange: cell streak and spots as above, but not tinged greenish: a series of interrupted terminal lines, white. Hindwing pale brown: a terminal patch between vein 3 and vein 5, dark brown: costa at base, white: a broad central band and a series of interrupted terminal lines, white.

♀. Above. Forewing as in male, but spots not tinged greenish: cell streak obscured towards base: postcellular spot smaller: subterminal spots larger. Hindwing as in male, but band not tinged greenish.

Beneath as in male: terminal white lines broader.

Loc. Cape York 3 4 5 8 9 10 11. Prince of Wales Is. 5 6. Banks Is. 2 3. Claudie R. 1. Cooktown 10. Cairns 6 7 9 10. Kuranda 9. Ingham 4 5 9. 23♂ 15♀.

The white markings are all much larger than in the typical race.

Genus **NEPTIS** Fabricius.

Illiger's Magazine, vi, 1807, p. 282: Moore, Proceedings Zoological Society London 1858, p. 3.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 and vein 10 from subcostal well before end of cell: cell less than half the length of wing and open. Hindwing with cell open and termen rounded. Sexmark of male consists of a silky grey area on dorsum of forewing beneath, and a corresponding but smaller and fainter area on costa of hindwing above.

Type. *Neptis aceris* Linne, from Europe.

55. **Neptis praslini** Boisduval. (New Ireland).

All the races of this species have a superficial resemblance to the races of *Tellervo zoilus*, and as with them, during life the eyes are bright yellow.

55a. **N. praslini staudingereana** de Niceville. **Fig. 42.**

Journal Bombay Natural History Society 1898, p. 139.

♂. Above. Forewing black: a basal streak and a spot in cell, and a large postcellular spot, white: a series of irregular discal spots, and an incomplete series of small subterminal spots, white. Hindwing black: a very broad central band, white: a complete series of small subterminal spots, white.

Beneath. Forewing dull black: spots as above but larger: traces of a terminal interrupted line, whitish. Hindwing dull black: a small basal spot and a large central area, white: subterminal spots as above but larger: an interrupted terminal line, whitish.

♀. Above and Beneath as in male.

Loc. Cape York 1 9 11. Claudie R. 11. Cooktown 11. Cairns 6 7 8 9 10 11 12. Kuranda 2 3 12. 17♂ 8♀.

The silky grey area on dorsum of forewing beneath in the male reaches to vein 3, while in *Phaedyma* it only extends to vein 2.

Maclay (A.N.B.) .2.12.

Genus **ACCA** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 44, 1816.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal before end of cell: vein 10 from vein 7 just beyond end of cell: cell less than half the length of wing and open. Hindwing with cell open and termen rounded. Male without a sexmark.

Type. *Acca venilia* Linne, from Amboina.

56. **Acca venilia** Linne. (Amboina).

This species is distinguished by the spots of the discal band of the forewing, in area 2 and area 3, forming a large round spot.

56a. **A. venilia moorei** Macleay. **Fig. 44.**

Proceedings Entomological Society N. S. Wales 1866, p. liii.

♂. Above. Forewing black: two faint dots in cell, whitish and a dot in end of cell, blue: two postcellular dots, whitish: a series of large irregular discal spots, white edged bluish grey: a series of subterminal dots, white. Hindwing black: a broad central band, white edged bluish grey: a series of faint subterminal dots, whitish.

Beneath. Forewing brown: dots and spots as above but larger. Hindwing brown: a thinly scaled basal band, whitish: a large central area, white: a complete series of small subterminal spots, and a series of terminal dots, white.

♀. Above and Beneath as in male.

Loc. Cape York 1 2 4 5 8 9 10 11. Claudie R. 11. 23♂ 16♀.

Macleay described this species as *Hamadryas moorei*: *Neptis mortifacies* Butler, is a synonym.

Genus **RAHINDA** Moore.

Lepidoptera of Ceylon, i, p. 56, 1881.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal before end of cell: vein 10 from vein 7 well beyond end of cell: cell less than half the length of wing and open. Hindwing with cell open and termen rounded. Sexmark of male consists of a pale yellow silky area on dorsum of forewing beneath, and a corresponding but smaller and fainter area on costa of hindwing above.

Type. *Rahinda hordonia* Stoll from India.

57. **Rahinda consimilis** Boisduval. (New Ireland).

In this species the lower portion of the orange discal band of the forewing forms a direct continuation of the central band of the hindwing.

57a. **R. consimilis pedia** Fruhstorfer. **Fig. 43.**

Stettiner Entomologische Zeitschrift 1908, p. 410.

♂. Above. Forewing rich chocolate brown: a broad interrupted discal band, bright orange-yellow. Hindwing rich chocolate brown: a broad central band, orange-yellow.

Beneath. Forewing pale yellow: a patch beyond cell, chocolate brown: apex and termen, chocolate brown lined dull brown. Hindwing pale yellow, shading darker towards base and costa: termen chocolate brown lined dull brown.

♀. Above and Beneath as in male: usually larger.

Loc. Cape York 4 5. Thursday Is. 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Claudie R. 12. Cairns 6 7 9 10 11 12. Kuranda 1 2 3 4 5 8 12. Ingham 9. Townsville 5. Mackay 2 3 4 5 9. 46♂ 36♀.

This race differs from typical *consimilis* in the discal band of forewing being narrower: in the subapical portion of this band extending beyond vein 7, and in the dark inner terminal line of hindwing beneath being paler in colour and waved instead of straight.

Genus **PRECIS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 33, 1816.

Antennae about half the length of costa, with clubs short, abrupt and broad. Eyes smooth. Forewing with vein 11 from subcostal well before end of cell: vein 10 from subcostal before end of cell: cell less than half the length of wing and open. Hindwing with cell less than half the length of wing and open: termen slightly produced at tornus. (**Fig. O.**).

Type. *Precis octavia* Cramer, from Africa.

We have followed Butler and Aurivillius in merging *Junonia* in this genus, which has precedence. No writer has yet succeeded in finding a reliable point of distinction between *Precis* and *Junonia*: the Indo-Malayan species may be separated by the colour, but the many African species of *Precis* make this doubtful character quite worthless.

58. **Precis hedonia** Linne. (Moluccas).

This species is very variable beneath, especially in the Australian race.

58a. **P. hedonia zelima** Fabricius. **Fig. 38.**

Systema Entomologiae, p. 492, 1775.

♂. Above. Forewing brown: two bars across cell, and a broad discal band, brown edged dark brown: an obscure subcostal dot at fivesixths, whitish: a series of irregular subterminal ocelli, red-brown ringed dark brown. Hindwing brown: a broad discal band, brown edged dark brown: a series of subterminal ocelli, red-brown ringed dark brown.

Beneath. Forewing rich brown: a series of transverse basal bands, paler, sometimes obscurely bluish: an obscure discal band, dark brown outwardly edged faintly whitish: subcostal dot and ocelli as above. Hindwing rich brown with paler transverse bands, sometimes obscurely bluish: an obscure dark band from costa at twothirds to tornus: sometimes a series of two to five diminishing spots from costa at twothirds, cream: ocelli as above.

♀. Above and Beneath as in male: tornus of hindwing less pointed.

Loc. Cape York 7 11. Prince of Wales Is. 6 7. Banks Is. 2. Claudie R. 11. Cairns 6 7 8 9 10 11. Kuranda 6 7 10 11. Ingham 4 5 9. Mackay 2 3 4 5 6 9 11. Rockhampton. Brisbane. Daly R. 4. Darwin 9 11. 28♂ 19♀.

59. **Precis villida** Fabricius.

A very wide ranging species: a small highly coloured race occurs as far to the east as Samoa. Fond of resting in the sunshine on dusty roads and paths with wings outspread.

59a. **P. villida villida** Fabricius. **Fig. 35.**

Mantissa Insectorum, p. 35, 1787.

♂. Above. Forewing brown: two bars across cell orange-brown edged black and with a space between bluish: an irregular band from costa at threefifths towards termen at threefifths, and a small subapical bar, cream: a broad irregular subterminal band, orange-brown, with a small ocellus in area 5 and a large one in area 2, black centred bluish: an interrupted terminal line, greyish. Hindwing brown, sometimes tinged bluish: a series of three faint small elongate spots at end of cell, orange-brown narrowly edged dark brown: a broad irregular subterminal band, orange-brown, with an ocellus in area 5 and another in area 2, black centred bluish: an interrupted double subterminal line, greyish.

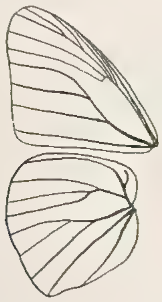


Fig. O. Wing venation of *Precis villida.*

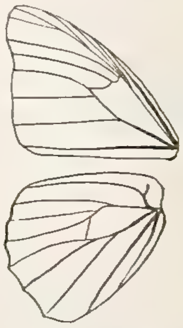


Fig. P. Wing venation of *Pyrameis itea.*

Camus (Highleigh) A.N.B. 5.

[illegible]

[illegible] of numerous head [illegible] point [illegible]

[illegible]

[illegible] spread

[illegible] black and white [illegible]
[illegible] towards [illegible] and a

[illegible]

Kosciusko (GAW) Mch 1920, Dec 1921 Urunga (H) Oct 1920.

Port Macquarie 3.4. 1918 Melbourne [H] 29.5.17 Wandin 8.10.15. (ANB)

Dayton V. 4/18 Toronto 4/17 Gisborne 12.1.17

BENEATH. Forewing pale browns or buffs, towards base often tinged bluish: markings as above but obscured: cell bars extending towards dorsum. Hindwing variable: mottled buffs and browns: often a narrow dark band from costa at twothirds to tornus: subterminal band sometimes faintly visible with ocelli always very minute and obscure.

♀. ABOVE and BENEATH as in male: termina more rounded: ocelli above usually larger.

LOC. Cape York 2 5. Thursday Is. 5 6. Prince of Wales Is. 5 6. Cairns 6 7. Kuranda 2 6 7. Ingham 4 5 9. Townsville 6 7. Mackay 2 4. Brisbane 4 5 6 10. Stradbroke Is. 12. Blackbutt 1. Mt. Tambourine 12. Dorrigo 10 11 12. Ebor 12. Port Macquarie 10 11. Manning R. 3 10. Ourimbah 4. Sydney 1 2 3 4 5 10 11. Illawarra 3 4. Blue Mts. 2 10. Mt. Kosciusko 1 2. Melbourne 3. Gisborne 1 2 3 4 9 10 12. Castlemaine 1 2 3 4 5 9 10 11 12. Sea Lake. Kerang. Dimboola 11. Launceston 3 12. Burnie 3. Adelaide 1 2 4 11 12. Balaklava 4 11. Morgan 1 12. Kangaroo Is. 11. Wilson's Inlet 12. Yallingup 11. Bridgetown 5. Waroona 12. Perth. Kellerberrin 11. Broome 5. Derby. Wyndham 3 4. Daly R. 4. Darwin 8 9. Roper R. 11. 31♂ 29♀.

One of our most abundant and widely distributed butterflies. We are unable to recognise either seasonal or geographical variations, though individual butterflies vary very considerably especially beneath.

60. **Precis orithyra** Linne. (India).

This species has a quite extraordinary range occurring not only throughout the Indo-Australian Region but also reaching Africa.

60a. **P. orithyra albicincta** Butler. **Fig. 37, 39.**

Transactions Entomological Society London 1875, p. 5.

♂. ABOVE. Forewing rich black, apex brown, costa narrowly white: two obscure bars across cell, red-brown: an irregular band from costa at threefifths to termen at threefifths, and a small subapical bar, white: an interrupted terminal line, whitish: a small ocellus in area 5, black edged red-brown and centred bluish: an obscure black ocellus in area 2 indicated by its bluish pupil: sometimes a small irregular narrow tornal streak, silky blue. Hindwing silky blue: base and dorsum rich black: a series of interrupted broad terminal lines, white narrowly edged black: usually a small blue-pupilled ocellus in area 5, black: a blue-pupilled ocellus in area 2, red ringed black.

BENEATH. Forewing brown, apex pale brown or buff, base orange: cell bars orange with space between and beyond pale blue edged black: a narrow discal band, pale bluish: white band, bar, and line, as above: ocelli as above, but that of area 2 large and ringed orange. Hindwing variable: usually pale browns and buffs: often a narrow dark band from costa at threefifths to tornus: ocelli obscure and minute.

♀. ABOVE. Forewing rich brown, costa narrowly whitish: two bars across cell, red-brown edged black: white band, bar and line, as in male: ocelli as in male, but that in area 2 larger and ringed red-brown: a small tornal area, silky blue. Hindwing silky blue, base broadly rich brown: terminal lines as in male: a large blue-pupilled ocellus in area 5 and another in area 2, red ringed black.

BENEATH as in male, but more variable: hindwing sometimes whitish, with basal markings orange, and with narrow dark band reddish brown.

LOC. Cape York 2 4 5 7. Thursday Is. Prince of Wales Is. 5 6 7. Darnley Is. 4. Claudie R. 1 11. Cooktown 4. Cairns 6 7 10. Kuranda 2 3 6 7. Atherton 12. Ingham 4 5 9. Townsville 4 5 6 7. Mackay 3 4. Brisbane. Wyndham 3 4. Darwin 3. Melville Is. 47♂ 45♀.

Genus **PYRAMEIS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 33, 1816.

Antennae slightly more than half the length of costa, with clubs short, abrupt and broad. Eyes densely hairy. Forewing with vein 11 from subcostal well before end of cell: vein 10 from subcostal just before end of cell: cell about half the length of wing and closed, with lower edge longer than upper edge. Hindwing with cell less than half the length of wing and closed: vein 3 and vein 4 arising close together: termen slightly produced at tornus. (**Fig. P.**).

TYPE. *Pyrameis cardui* Linne, from Europe.

A widespread genus with headquarters in the Palaearctic Region, but with some species reaching the tropics.

61. **Pyrameis cardui** Linne. (Europe).

An almost worldwide species, whose races differ but slightly. The blue centred ocelli of the hindwing are typical of the Australian race.

61a. P. cardui kershawi McCoy. Fig. 36.

Annals Magazine Natural History 1868, p. 76.

♂. Above. Forewing orange, base and dorsum brown: apex broadly, costa and termen narrowly, black: a band of irregular spots from costa before onethird to dorsum at twothirds, black: a bar from costa at twothirds, and a series of small subapical spots, white: an obscure interrupted terminal line, whitish. Hindwing orange, base and dorsum brown, costa black: an interrupted subterminal line, black, with two obscure spots at tornus, blue: a narrow terminal line with a spot at each vein, black: a series of four discal ocelli, black, those in areas 2, 3 and 4 centred blue.

Beneath. Forewing as above: orange area paler and reaching base: an obscure spot at end of cell, whitish: apex broadly brown. Hindwing brown mottled with creams and yellows: a series of four or five variable discal ocelli.

♀. Above and Beneath as in male.

Loc. Kuranda 11. Ingham 9. Mackay 1 10 11. Brisbane 10. Stradbroke Is. 12. Blackbutt 1. Mt. Tambourine 12. Richmond R. 1. Dorrigo 10 11 12. Ebor 1 12. Port Macquarie 10. Sydney 1 8 9 10 11 12. Illawarra 11. Blue Mts. 10. Pambula 12. Mt. Kosciusko 1.2. Mt. St. Bernard 1 2. Wandin 8 10 12. Melbourne 1 9 10 12. Gisborne 1 2 9 10 11 12. Castlemaine 1 2 8 9 10 11 12. Sea Lake. Kerang. Dimboola 11. Launceston 12. Zeehan 11. Adelaide 1 8 9 10 11 12. Wilson's Inlet 11 12. Warren R. Yallingup 11. Waroona 1 11 12. Kellerberrin 11. Perth 11. Kalgoorlie 8. Geraldton 11. Monte Bello Is. 31♂ 29♀.

An aberration of this subspecies, in which the white spots and line in apex of forewing are absent, was described by Olliff (Proc. Linn. Soc. N.S.W. 1888, p. 1250) as *P. kershawi*, var. *suffusa*. A very similar aberration was described by Miskin as *P. lucasi* (Proc. Linn. Soc. N.S.W. 1888, p. 1516).

62. Pyrameis itea Fabricius. Fig. 34.

Systema Entomologiae, p. 498, 1775.

♂. Above. Forewing black: a broad basal area, rich red-brown: a broad central area from costa to vein 1a, cream: a bar across cell, black: a bar from costa at twothirds, cream: two dots from costa at fivesixths, and a small subterminal spot in area 4, white. Hindwing rich red-brown: apex broadly and termen, black: a series of small blue-pupilled discal ocelli, black.

Beneath. Forewing as above: apex and termen brown mottled whitish: a large postcellular ring near costa, blue. Hindwing brown-black mottled greyish: a series of irregular pale-centred obscure discal ocelli, brown.

♀. Above and Beneath as in male.

Loc. Atherton. Herberton 1 10. Brisbane 10. Stradbroke Is. 12. Blackbutt 1. Mt. Tambourine 12. Richmond R. 4 5 9. Dorrigo 10 11. Ebor 12. Port Macquarie 10 11. Manning R. 3 4. Ourimbah 4. Sydney 1 2 9 10 11. Blue Mts. 10 11. Mt. Kosciusko 1.2 Mt. St. Bernard 1 2. Wandin 3 11 12. Melbourne 3 10. Gisborne 1 2 3 8 9 10 11. Castlemaine 9 10 11 12. Sea Lake. Kerang. Dimboola 11. Launceston 3 11. Mt. Magnet 3. Adelaide 9 10 11 12. Balaklava 11. Kangaroo Is. 11. Yallingup 10. Waroona 9. Perth 10 11. 29♂ 27♀. Toronto 4/17.

Genus MYNES Boisduval.

Voyage Astrolabe, Lepidoptera, p. 129, 1832.

Antennae much more than half the length of costa, with clubs long, gradual and slender. Eyes hairy. Forewing with vein 11 and vein 10 arising close together from subcostal before end of cell: cell less than half the length of wing, and closed, with lower edge longer than upper edge. Hindwing with cell open and termen toothed at vein 4.

Type. *Mynes geoffroyi* Guerin, from New Guinea.

63. Mynes geoffroyi Guerin. (New Guinea).

63a. M. geoffroyi guerini Wallace. Fig. 48.

Transactions Entomological Society London 1869, p. 78.

♂. Above. Forewing greyish white, paler towards tornus: costa narrowly, apex broadly, and termen, black: a series of illdefined subapical spots, cream. Hindwing greyish white: apex broadly and termen narrowly, black: an obscure subterminal band, bluish grey.

Wandin 19 (A.N.B. 17.5.15) (white shorted aberration 3.10.15) ~~[illegible]~~. Dayton V. (RMG) 8.9 1917. Toronto " " Kosciusko (GAW) Dec 1921 Feb. 1920
Richmond R. 9.10.11. Gisborne W. (1928)

Wandin 22/9/15 (ANB) Stanwell Park apl 1916. Gisborne July 27th 1916. Port Macquarie 3.4/1918 Kosciusko (GAW) Feb. 1920 Mch 1920 Dec 1921
& again (1928)
Urunga (W) oct 20. Richmond R. 3.10.

[illegible]

[illegible] been mounted with [illegible] and [illegible]

[illegible]

[illegible] which the pore opens and line in apex of [illegible]

[illegible]

[illegible] and b, ends. He [illegible]

[illegible]

[illegible] [illegible] [illegible]

[illegible]

[illegible] [illegible] [illegible]

[illegible] land, [illegible]

Beneath. Forewing black, towards centre brown-black: dorsum dull white: a postcellular costal spot, white: a series of broad subapical spots, yellow: a large subterminal spot in area 3, red. Hindwing dull black: termen greyish: costa at base, red: a subdorsal streak, yellow: termen from dorsum to vein 4, dusted yellowish green.

♀. Above as in male: black margins broader: greyish areas dusted black: termen of hindwing broadly black.

Beneath as in male.

Loc. Claudie R. 11. Coen 11. Cairns 1 2 6 8 10 11 12. Kuranda 2 3 11 12. Herberton 10. Mackay 4. Brisbane. Byron Bay 3. 21♂ 15♀. Richmond R. [illegible] 1.3.

63aa. M. geoffroyi guerini, f. semperi Staudinger. Fig. 46, 46a.

Exotic Butterflies, p. 175, 1886.

♂. Above. Forewing greyish white, paler in disc and towards tornus: costa narrowly, apex broadly, and termen, black: a series of illdefined subapical spots, cream. Hindwing greyish white, paler in disc: apex broadly and termen narrowly, black: a basal and a subterminal obscure band, bluish grey.

Beneath. Forewing silky white: costa narrowly and apex broadly, black: an illdefined streak on median vein, black: a postcellular costal spot, white: a series of broad subapical spots, yellow: a large subterminal spot in area 3, red. Hindwing dull black: a large central area, white, with dorsum broadly yellow: termen greyish: costa at base, red: termen from dorsum to vein 4, dusted yellowish green.

♀. Above as in male: white instead of greyish white: termen of hindwing broadly black.

Beneath as in male.

Loc. Claudie R. 11. Cooktown. Atherton 1 10. Cairns 10 11. Mackay 4. 9♂ 5♀.

This is the extreme white form of *guerini* and is neither a seasonal nor a geographical variation: we have examples intergrading with typical *guerini*.

The species is a variable one: a form with the forewing beneath as in *semperi* and the hindwing beneath as in *guerini* has been named *negrito* Fruhstorfer; we have *negrito* from Cairns (11 12) Kuranda (1 12) and Mackay (3 5). The foodplant of the larvae is the stinging-nettle-tree. **Figure** 46a is a female, but is wrongly marked on the plate as a male.

Genus YOMA Doherty.

Journal Asiatic Society Bengal 1886, p. 258.

Antennae not quite half the length of costa, with clubs long, gradual and broad. Eyes smooth. Forewing with vein 10 from subcostal just before end of cell: cell broad, less than half the length of wing and closed, with lower and upper edges of about equal length. Hindwing with cell less than half the length of wing and closed: vein 3 and vein 4 stalked: termen produced at vein 1a and at vein 4.

Type. *Yoma vasuki* Doherty, from Burmah.

64. Yoma sabina Cramer. (Moluccas).

We consider that *Y. algina* and its various forms are further subspecies of *sabina,* for we have both *sabina* and *algina* from the Aru Is. *Rhinopalpa,* to which the Australian race of *sabina* has been previously referred, differs from *Yoma* in having the cells of both wings open.

64a. Y. sabina parva Butler. Fig. 40.

Annals Magazine Natural History 1876, p. 123.

♂. Above. Forewing rich chocolate brown: two obscure bars across cell, brown margined dark brown: a broad discal band, and a series of variable ill-defined subapical spots, orange. Hindwing rich chocolate brown: a broad discal band, orange: a subterminal line, dark brown.

Beneath. Very variable: mottled greys and browns with darker shadings: a series of paler transverse basal bands: usually a broad discal band, often obscured on the outer edge, dull white or cream: a complete series of irregular, sometimes large but usually minute and obscured, discal ocelli, brown-black sometimes ringed reddish brown: a narrow subterminal line, dark brown-black.

♀. Above as in male: a pair of subterminal dots in areas 3 and 4 of forewing, orange.

Beneath as in male: the two minute discal ocelli in areas 3 and 4, corresponding to the orange dots above, cream.

Loc. Cape York 1 4 5. Thursday Is. 1 5. Prince of Wales Is. 5 6. Banks Is. 2 3. Darnley Is. 4 5 6 12. Murray Is. 8 9. Claudie R. 1. Cooktown 4 10. Kuranda. Darwin 3. 32♂ 17♀.

A dryseason form of much less than average size is sometimes met with, to which Fruhstorfer has given the name *australis*. It has the orange band broader and the subapical spots of forewing larger, traces of a faint tawny spot in cell of forewing, tooth of vein 4 of hindwing shorter, and often a violet reflection upon the chocolate brown areas.

Genus **HYPOLIMNAS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 45, 1816.

Antennae not quite half the length of costa. Eyes smooth. Forewing with vein 10 from subcostal just before end of cell: cell less than half the length of wing and closed, with lower and upper edges of about equal length. Hindwing with cell much less than half the length of wing and closed: vein 3 and vein 4 arising from almost the same point: termen rounded. (**Fig. Q.**)

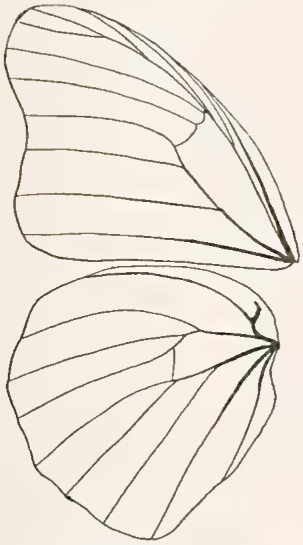


Fig. Q. Wing venation of *Hypolimnas lamina.*

Type. *Hypolimnas bolina* Linne, from India.

65. **Hypolimnas misippus** Linne. **Fig. 54, 56.**

Museum Ludovicae Ulricae Reginae Svecorium, p. 264, 1764.

♂. Above. Forewing rich brown-black: a large discal patch and a small subapical bar, silky white margined with iridescent purple. Hindwing rich brown-black: a large central spot, silky white margined with iridescent purple.

Beneath. Forewing brown, base red-brown, apex tawny brown: costal edge of cell black, with a series of three small spots, white: a large discal patch, reaching costa, and a subapical bar, silky white: a series of interrupted terminal lines, white. Hindwing brown: a broad discal band, silky white: three bars across area 7, and a tornal streak, black: a series of broad interrupted terminal lines, white edged black.

♀. Above. Forewing tawny orange with veins narrowly brown-black: costa narrowly, apex very broadly, and termen, brown-black: a discal bar from costa at threefifths towards termen before half, and a series of small subapical spots, white: a series of interrupted terminal lines, white. Hindwing tawny orange, with veins narrowly brown-black: a subcostal spot, black: termen narrowly black with a series of faint interrupted lines, white.

Beneath. Forewing tawny orange, shading to red-brown in cell: costal edge of cell black with a series of three spots, white: bar, spots, and lines as above. Hindwing tawny brown: a basal, a subcostal, and a postcellular bar, black: a series of faint subterminal dots, whitish: termen as above but with white lines broader.

Loc. Darnley Is. 4 5. Cairns 1 4 6 7 10 12. Kuranda 5 6 7. Ingham 4 5. Townsville 4 6 7. Mackay. Brisbane. Daly R. 4. Darwin 3 4. 22♂ 25♀.

[illegible] large discal patch [illegible] costa, and a [illegible]

[illegible] vary from dark [illegible] spot, black [illegible] brown [illegible]

[illegible] indicated [illegible]

This is a wide ranging species found throughout the Indo-Australian and Aethopian Regions. The male is constant both in colour and markings, but the female has some remarkable variations: these have not been recorded in Australia, but in Africa one form of the female is without the black apex and white discal bar of forewing, and another has the hindwing white instead of orange: these variations correspond to similar varietal forms of *Danaida chrysippus.*

66. **Hypolimnas bolina** Linne. (India).

This species is taken throughout the Indo-Australian Region, from the Himalayas of India to as far eastwards as Samoa, where a small highly coloured race occurs: the Australian race is the largest and finest known.

66a. **H. bolina nerina** Fabricius. **Fig. 53, 55.**

Systema Entomologiae, p. 509, 1775.

♂. Above. Forewing rich black: a discal bar, white dusted purple and broadly margined with iridescent purple: a bar of three small subapical spots, white dusted purple. Hindwing rich black: a large central spot, white dusted purple and broadly margined with iridescent purple.

Beneath. Forewing brown with tornus shading to dark brown and cell to red-brown: costal edge of cell, black dusted white, with a series of three small spots, white dusted blue: a discal bar, reaching costa, white: a series of small subterminal spots, white dusted blue: a series of interrupted terminal lines, white. Hindwing brown: an interrupted discal band, white: a series of small subterminal spots, white dusted blue: a series of very broad interrupted terminal lines, white.

♀. Above. Forewing rich brown-black: a discal bar of large spots, white dusted blue: three small subapical spots, continued as a series of subterminal dots, white dusted blue: a series of faint interrupted terminal lines, white: an irregular dorsal patch at twothirds, tawny orange. Hindwing rich brown-black: a large central patch, white dusted and margined blue: a series of faint interrupted terminal lines, white.

Beneath as in male: white markings broader: dorsal patch of forewing as above but paler.

Loc. Cape York 3 8. Thursday Is. 1. Prince of Wales Is. 6 7. Banks Is. 2. Darnley Is. 4 5 6 12. Cooktown 12. Cairns 6 7. Kuranda 4 6 7. Ingham 4 5 9. Townsville 3 4 7. Mackay 3 4 5. Brisbane 1 2 3 4 5 6 7 9 10. Esk. Richmond R. 1 2 3. 5. Sydney 3. Moruya. Derby. Daly R. 4. Darwin 1 8 12. Roper R. 11. 34♂ 48♀.

This subspecies has a number of moderately constant, strongly marked variations, which, for convenience sake, may be roughly indicated as follows.

a. ♂. White bars of forewing and central spot of hindwing smaller and obscured by purple scales.
b. ♀. Forewing with discal bar absent: hindwing with central patch tawny orange.
c. ♀. Forewing with discal bar iridescent blue, and orange dorsal patch small: hindwing with central patch absent or indicated by a few blue scales.
d. ♀. Forewing with blue scales and dorsal patch absent: hindwing with blue scales absent.
e. ♀. Forewing with discal bar indicated by a few blue scales only, and dorsal patch absent: hindwing with central patch absent.

We have intergrades between these variations so do not regard them as sufficiently constant to warrant their being named as forms of *nerina.*

67. **Hypolimnas alimena** Linne. (Amboina).

A widespread and variable species occurring in the Papuan region.

67a. **H. alimena lamina** Fruhstorfer. **Fig. 57, (70).**

Berliner Entomologische Zeitung 1903, p. 73.

♂. Above. Forewing blue-black: a variable discal band, silky blue: a series of small subterminal spots, white dusted blue: a series of small triangular terminal spots (two in each area and obscured towards apex) white dusted blue: an interrupted terminal line, white. Hindwing blue-black: a variable discal band, silky blue: a subterminal series of small spots, white dusted blue: terminal spots and line as on forewing.

Beneath. Forewing blue-black: base and apex broadly brown: costal edge of cell with a series of three small spots, white edged black: discal band narrower than above, and often absent: subterminal spots as above: terminal spots and line as above but broader. Hindwing brown: discal band only indicated by a dusting of bluish grey scales: subterminal spots as above: terminal spots as above but larger and confluent.

♀. Above. Forewing as in male: discal band narrower and with four large white spots towards costa. Hindwing as in male: discal band narrower and nearer termen: terminal spots larger.

Beneath as in male: forewing always with four large white discal spots towards costa.

Loc. Cape York 3 4 5 8. Thursday Is. 4 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 5 6 12. Murray Is. 8 9. Claudie R. 1. Cairns 6 7. Kuranda 1 3 4 5 6 11 12. Ingham 5 9. Mackay 3 4 6. Gympie. 20♂ 35♀.

This subspecies has at least two strongly marked variations of the female, which we describe below: as we have intergrades between the two variations, and also between each of them and typical female *lamina*, we do not regard them as sufficiently constant to warrant their being named as forms of *lamina*.

a. ♀. Above. Forewing brown-black: termen broadly reddish brown: discal band represented by four large spots towards costa, white sometimes dusted blue: a series of small subterminal spots, white sometimes dusted blue: terminal spots and line as in male. Hindwing brown-black: termen broadly reddish brown: a series of small subterminal spots, white sometimes dusted blue: a series of triangular terminal spots, and a terminal line, white.

Beneath as in typical *lamina* female.

b. ♀. **(Fig. 70)**. Above. Forewing reddish brown, towards termen paler: a series of subterminal spots, white: terminal spots and line as in male but fainter. Hindwing reddish brown, towards termen much paler: spots as in form a.

Beneath as in typical male *lamina*: discal band of forewing absent.

Form a. corresponds with form *velleda* of typical *alimena*, and is fairly abundant on Cape York and the islands of Torres Straits. Form b. corresponds with form *porphyria* of typical *alimena*: it is taken in the same localities as form a, but is not nearly so abundant.

67b. **H. alimena darwinensis** nov. **Fig. 783, 792.**

♂. Above. Forewing blue-black: a variable discal band, with four large white spots towards costa, silky blue: a subterminal series of spots, white dusted blue: a series of small triangular terminal spots (two in each area and obscured towards apex), white dusted blue: a faint interrupted terminal line, white. Hindwing blue-black: a variable discal band, silky blue: a series of subterminal spots, white dusted blue: terminal spots and line as on forewing but much broader.

Beneath. Forewing blue-black: base and apex broadly brown: costal edge of cell with a series of three small spots, white edged black: discal band as above but towards dorsum narrower: subterminal spots as above: terminal spots and line as above, but broader. Hindwing brown: discal band only indicated by a dusting of bluish grey scales: subterminal spots as above: terminal spots and line as above but larger and confluent.

♀. Above. Forewing brown: a discal bar of four large subapical spots, white: a series of subterminal spots, white: a series of terminal spots (two in each area) and a faint interrupted terminal line, white. Hindwing brown with termen much paler: a series of large subterminal spots, white: a series of large triangular terminal spots, and an interrupted terminal line, white.

Beneath. Forewing as above, but paler towards apex and base: costal spots as in male. Hindwing pale brown: faint traces of a discal band, white: subterminal spots and terminal spots and line, as above.

Loc. Daly R. 4. Darwin 3 8 9. 6♂ 4♀.

The male of this subspecies may be separated from *lamina* by the four large white discal spots of forewing: in general appearance it is very similar to female *lamina*. The female corresponds to form a. of female *lamina*, but is much paler, and without any trace of blue scales.

68. **Hypolimnas antilope** Cramer. (Moluccas).

68a. **H. antilope albula** Wallace. **Fig. 782.**

Transactions Entomological Society London 1869, p. 287.

♂. Above. Forewing brown: discal band indicated only by three faint postcellular streaks, cream: a series of faint subterminal spots with those near apex fused, cream: a series of interrupted subterminal lines, cream. Hindwing brown: termen broadly cream with veins brown and a narrow terminal line, brown.

[illegible] terminal spots and line as in male. [illegible]

[illegible] and a terminal line white.

[illegible]

[illegible] with [illegible]

[illegible] band, with [illegible]

[illegible]

Beneath. Forewing as above: costal edge of cell brown-black with a series of three dots, white: an oblique series of discal streaks, white. Hindwing as above: a spot in area 7, cream.

Loc. Darwin 3. 1♂.

Wallace described this race from Timor: the female is darker and suffused purple above. Our single male is the only example yet taken in Australia.

Genus **DOLESCHALLIA** Felder.

Ein Neues Lepidopteron, p. 14, 1861.

Antennae about half the length of costa, with clubs long and gradual. Eyes smooth. Forewing with vein 10 from subcostal just before end of cell: cell much less than half the length of wing and open. Hindwing with cell much less than half the length of wing and open: termen produced at vein 1a to a blunt tail.

Type. *Doleschallia bisaltide* Cramer, from Java.

The genus has a wide range, occurring from India to Fiji: the species are all of similar colours and shape.

69. **Doleschallia bisaltide** Cramer. (Java).

69a. **D. bisaltide australis** Felder. **Fig. 66, 71.**

Reise Novara Lepidoptera, iii, p. 405, pl. 51, f. 1, 1867.

♂. Above. Forewing rich orange-brown: apex and termen broadly black: a series of subapical dots, white. Hindwing rich red-brown shading darker towards termen: apex broadly and obscurely brown-black: an obscure subterminal line, brown-black.

Beneath. Very variable: red, grey, purple and green shades of brown: basal areas usually paler but sometimes darker than outer areas, but always separated from outer areas by a narrow dark, sometimes obscure, central line: usually a bar across cell and a bar at end of cell of forewing, darker: sometimes a series of spots in basal areas of both wings, white: subapical dots of forewing as above and continued across both wings as a series of obscure and very irregular discal ocelli, that in area 5 of hindwing the largest.

♀. Above and Beneath as in male.

Loc. Cape York 2 3 4 5. Thursday Is. 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 5. Claudie R. 11. Cairns 6. Kuranda 1 7 8 10 12. Ingham 4. Mackay 3 4. Brisbane. Richmond R. 1. 35♂ 15♀.

Genus **CETHOSIA** Fabricius.

Illiger's Magazine, vi, 1807, p. 280.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal just before end of cell: vein 10 from vein 7 well beyond end of cell: cell about half the length of wing and closed. Hindwing with cell about half the length of wing and closed: vein 3 and vein 4 arising from nearly the same point: termen strongly dentate.

Type. *Cethosia cydippe* Linne, from the Moluccas.

In addition to the two forms described below, the blue *C. lamarcki* has been recorded from Australia. As *lamarcki* is a Timor species this record may be correct but it has never been authenticated.

70. **Cethosia cydippe** Linne. (S. Moluccas).

70a. **C. cydippe chrysippe** Fabricius. **Fig. 64, 65.**

Systema Entomologiae, p. 502. 1775.

♂. Above. Forewing purplish black: a basal area, reaching cell and along dorsum to twothirds, orange-red: costa narrowly and faintly red: a broad band from costa at threefifths to area 3, white with veins black. Hindwing purplish black: a broad basal area, orange-red: a strongly dentate faint narrow terminal line, white.

Beneath. Forewing purplish brown: a broad basal area, orange-red: a series of spots and bars in upper edge of cell, black edged bluish grey: a series of postcellular spots, black: discal bar as above: a series of obscure elongate subterminal spots, purple-brown edged whitish: a narrow dentate terminal line, white. Hindwing purplish brown: a series of obscure basal spots, orange-red: a series of irregular interrupted transverse broad basal lines, black edged bluish grey: a series of discal and a series of subterminal spots, black edged bluish-grey: a strongly dentate narrow terminal line, white.

♀. Above as in male: basal areas red-brown instead of orange-red.
Beneath as in male.

Loc. Cape York 10 11. Claudie R. 11. Cooktown. Cairns 6 7 11. Kuranda 1 4 7 9 10 11. Ingham 5 9. Townsville. 25♂ 5♀.

C. imperialis Butler is a synonym of *chrysippe*.

71. **Cethosia penthesilea** Cramer. (Java).

We only know the Timor race from Fruhstorfer's description: the Australian subspecies appears to be identical.

71a. **C. penthesilea paksha** Fruhstorfer. **Fig. 60, 61.**

Stettiner Entomologische Zeitschrift 1905, p. 105.

♂. Above. Forewing black: a broad basal area, reaching cell and along dorsum almost to tornus, orange: a series of ill-defined cell bars and discal spots, black: a broad band from costa at twothirds to area 3 near termen, white: a series of faint subapical dots and a faint interrupted terminal line, white. Hindwing orange: a series of obscure discal streaks and a series of subterminal spots, black: termen black with a strongly dentate narrow terminal line, white.

Beneath. Forewing dull red: a series of bars across cell, black edged bluish grey: a discal band, bluish grey edged black: white band as above: a series of irregular elongate subterminal spots, black edged bluish grey: a narrow dentate terminal line, white. Hindwing dull red: a series of irregular interrupted transverse broad basal lines, black edged bluish grey: a discal band and a narrow subterminal band, bluish grey edged with a series of irregular spots, black ringed bluish grey: termen dull black with a strongly dentate narrow terminal line, white.

♀. Above as in male: basal area orange-brown: hindwing with a series of postcellular streaks between veins, black.
Beneath as in male.

Loc. Daly R. 4. Darwin 1 2 3 4 5 8 9 10 11 12. Melville Is. 24♂ 8♀.

We have several aberrant examples which have lost, or nearly lost, the broad white bar of forewing: the dark spots and bands beneath are broader and the bluish grey edges narrower. One example has the whole of the markings beneath very much obscured.

Genus CYNTHIA Fabricius.

Illiger's Magazine, vi, 1807, p. 281.

Antennae more than half the length of costa, with clubs long and gradual. Eyes smooth. Forewing with vein 10 from subcostal at end of cell or from vein 7 just beyond end of cell: cell not quite half the length of wing and closed, with lower edge much shorter than upper edge. Hindwing with cell much longer than half the length of wing, and closed by a fold of the wing membrane only: vein 3 and vein 4 arising well apart: termen produced to a tooth at vein 4. **(Fig. R.).**

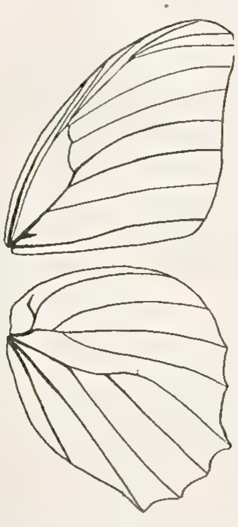


Fig. R. Wing venation of *Cynthia ada*, male.

Type. *Cynthia arsinoe* Cramer, from Amboina.

A genus of large strongly built butterflies ranging from India in the west to the Solomon Islands in the east.

[illegible]

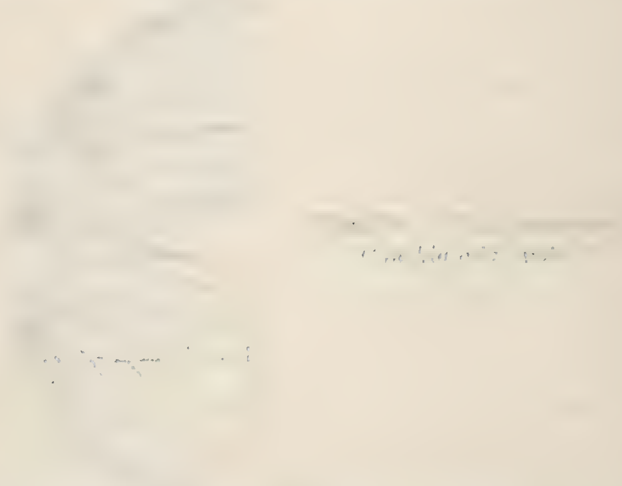
[illegible] small oval dots and a faint line [illegible]

[illegible] black edged bluish gray [illegible]

[illegible]

[illegible] 1897, p. 236.

[illegible]



[illegible]

72. **Cynthia arsinoe** Cramer. (Amboina).

72a. **C. arsinoe ada** M. R. Butler. **Fig. 45, 45a, 47, 47a.**

Proceedings Entomological Society London 1873, p. 686.

♂. Above. Forewing rich orange: a series of narrow streaks across cell, black: a faint discal band, orange basally edged black: a series of subterminal spots, and an interrupted subterminal line, black. Hindwing rich orange: a faint discal band, orange: a series of elongate subterminal spots, and a terminal line, black: a ringed ocellus in area 5 and another in area 2, black.

Beneath. Forewing dull orange, outer areas paler: dorsum rich orange: cell bars rich orange narrowly edged black: a narrow elongate ring on discocellulars, black: a central irregular line, and a series of dentate discal and terminal lines, red-brown: two small subcostal spots in apex, white: traces of a series of subterminal dots, black. Hindwing orange, outer area paler with termen silky lilac: a narrow elongate ring on subcostal, black: a basal and a central transverse line, red-brown: an obscure narrow band from apex to tornus, red-brown basally edged silky lilac: two dentate terminal lines, red-brown: ocelli as above but centred white.

♀. Above. Forewing brown: streaks, spots and lines as in male but broader and dark brown: a broad discal band, white basally edged dark brown: two small subcostal spots in apex, white: subterminal spots outwardly edged white. Hindwing brown: markings and ocelli as in male but broader and dark brown: discal band white from costa to vein 6, and thence to tornus white suffused orange: termen suffused orange.

Beneath as in male: basal areas dull brown: outer areas lilac-white.

Loc. Banks Is. 2 3. Cooktown 11. Cairns 2 6 11. Kuranda 1 2 3 4 7 11 12. Ingham 5 9. Mackay 2. 27♂ 25♀.

Genus **CUPHA** Bilberg.

Eumeratio Insectorum, p. 79, 1820.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing with vein 11 from subcostal just before end of cell: vein 10 from vein 7 well beyond end of cell: cell less than half the length of wing and closed, with lower edge longer than upper edge. Hindwing with cell less than half the length of wing and open: termen rounded.

Type. *Cupha erymanthis* Drury, from N. India.

73. **Cupha prosope** Fabricius.

73a. **C. prosope prosope** Fabricius. **Fig. 52, 52a.**

Systema Entomologiae, p. 504, 1775.

♂. Above. Forewing reddish brown: a broad discal band, orange, usually with a terminal extension in area 2 and area 3 each showing traces of a small discal spot dark brown: apex and termen broadly rich dark brown: two ill-defined subapical spots, orange. Hindwing reddish brown: a broad discal band, orange: termen broadly dark brown with an obscure series of subterminal spots, brown-black.

Beneath. Forewing dull yellow-brown: a broad discal band, two subapical spots, and a series of small faint terminal spots, pale yellow edged red-brown: a subcostal area at fivesixths, lilac brown: a series of subterminal dots, and a tornal spot, brown-black faintly edged red-brown. Hindwing dull yellow-brown: a broad discal band and a faint band of subterminal spots, pale yellow edged red-brown: a subterminal band, lilac-brown with a series of spots, brown-black edged faint red-brown and basally bordered with a band of faint narrow spots, pale yellow.

♀. Above as in male: subterminal dark spots of hindwing not so obscure.

Beneath as in male.

Loc. Cape York 2 3 4 5 9 12. Thursday Is. 5. Banks Is. 2 3. Murray Is. 8 9. Claudie R. 1. Cooktown 10. Cairns 6 7 11. Kuranda 1 2 3 4 5 6 7 11 12. Ingham 4 5. Mackay 1 2 3 4 5 8. Brisbane. Richmond R. 1. 34♂ 23♀.

73b. **C. prosope turneri** Butler. **Fig. 791.**

Annals Magazine Natural History 1876, p. 244.

♂. Above. Forewing reddish brown: a broad discal band, bright orange, very rarely with a terminal extension in area 2 in which is a large discal spot, brown-black: apex and termen broadly brown-black: sometimes traces of two very obscure subapical spots, orange. Hindwing reddish brown: a broad discal band, bright orange: termen broadly brown-black.

Beneath. Forewing pale yellow-brown: a broad discal band, two subapical spots and a series of small faint terminal spots, pale yellow faintly edged orange-brown: an illdefined subcostal area at fivesixths, purple-brown: a series of subterminal dots, and a tornal spot, brown-black edged orange-brown. Hindwing pale yellow-brown: a broad discal band and a faint band of subterminal spots, pale yellow faintly edged orange-brown: a subterminal band, purple-brown, with a series of large spots, brown-black edged orange-brown and basally bordered with a band of faint narrow spots, pale yellow.

♀. Above as in male: traces of an obscure series of large subterminal spots on hindwing, brown-black. Beneath as in male.

Loc. Darnley Is. 4 5 6 12. 16♂ 10♀.

A few of our examples show a tendency towards *prosope,* but the greater number appear to be identical with *turneri,* described by Butler from Port Moresby, New Guinea.

Genus **ISSORIA** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 31, 1816.

Antennae slightly more than half the length of costa, with clubs long and gradual. Eyes smooth. Forewing with vein 11 from subcostal before end of cell: vein 10 from vein 7 well beyond end of cell: cell less than half the length of wing and closed, with lower and upper edges of about equal length. Hindwing with cell less than half the length of wing and closed: vein 3 and vein 4 from about the same point: termen produced to a blunt tooth at vein 4.

Type. *Issoria egista* Cramer, from the Moluccas.

74. **Issoria egista** Cramer. (Moluccas).

74a. **I. egista propinqua** Miskin. **Fig. 49, 49a.**

Transactions Entomological Society London 1884, p. 94.

♂. Above. Forewing rich orange: apex and termen narrowly brown-black: a series of faint narrow streaks across cell, brown: a costal bar at half and another at twothirds, brown-black: a series of faint minute subterminal spots, brown-black. Hindwing rich orange shading darker to tornus: termen narrowly brown-black: an interrupted broad subterminal line, brown-black.

Beneath. Forewing reddish-brown with base suffused lilac: dorsum pale orange: a series of narrow cell bars, brown-black: a costal bar of three spots at half, whitish: an elongate subcostal spot at fourfifths, and a large subapical spot in area 5, pale yellow: an obscure discal band, reddish yellow basally edged with an irregular series of small lunular spots, white, and with a central series of small spots, brown-black: a series of faint subterminal spots, yellow-brown. Hindwing reddish brown suffused lilac: costa at base dull yellow-brown: an obscured broad discal band, basally edged with a series of small ill-defined spots, white, and with a central series of spots, brown-black edged yellow-brown: a large spot in area 7 at threefifths, white: a series of faint subterminal spots, yellow-brown, edged red-brown, in tornus edged brown.

♀. Above and Beneath as in male.

Loc. Cairns 2 6 11 12. Kuranda 1 2 3 4 12. Ingham 4. 21♂ 5♀.

Genus **ATELLA** Doubleday.

Genera Diurnal Lepidoptera, p. 165, 1848.

Antennae slightly more than half the length of costa, with clubs long and gradual. Eyes smooth. Forewing with vein 11 from subcostal just before end of cell: vein 10 from vein 7 well beyond end of cell: cell much less than half the length of wing and closed, with lower and upper edges of about equal length. Hindwing with cell less than half the length of wing and closed: vein 3 and vein 4 from almost the same point: termen rounded.

Type. *Atella phalanta* Drury, from India.

This genus is closely allied to *Issoria* but the hindwing is of an altogether different shape.

[illegible]

[illegible] brown blue; upper and lower [illegible] obscure [illegible] spots [illegible]

[illegible]

[illegible] ISSORIA Hübner.

[illegible]

[illegible] pale yellow [illegible]

[illegible]

75. **Atella phalanta** Drury.

The Australian race is paler and smaller than specimens from India and Ceylon, and the spots, especially those of the hindwing, are smaller.

75a. **A. phalanta araca** nov. **Fig. 50.**

♂. Above. Forewing bright orange: a series of narrow streaks across cell, brown-black: a costal bar at threefifths and another at twothirds, brown-black: a series of waved terminal lines, brown-black: a row of four spots from lower apex of cell to before dorsum at twofifths, brown-black: a series of small discal spots, brown-black. Hindwing bright orange: a series of discal spots, and a series of waved terminal lines, brown-black.

Beneath. Forewing orange-brown: markings as above but much narrower and fainter, and brown instead of brown-black: a larger discal spot in area 1a, black. Hindwing pale orange-brown: an ill-defined discal band, lilac-brown basally edged with a series of ill-defined spots, whitish, and with a central series of irregular ill-defined spots, brown-black edged red-brown: a series of waved terminal lines, brown.

♀. Above and Beneath as in male: terminal lines broader.

Loc. Daly R. 4. Darwin. 5♂ 4♀.

Genus **ARGYNNIS** Fabricius.

Illiger's Magazine, vi, 1807, p. 283.

Antennae about half the length of costa, with clubs short, abrupt and broad. Eyes smooth. Forewing with vein 10 from subcostal just before end of cell: median vein with a basal spur: cell not quite half the length of wing and closed, with lower and upper edges of about equal length. Hindwing with cell about half the length of wing and closed: vein 3 and vein 4 from almost the same point: termen rounded.

Type. *Argynnis aglaia* Linne, from Europe.

A section of this genus has vein 10 from vein 7 instead of from subcostal, but this is not represented in Australia.

76. **Argynnis hyperbius** Johannsen. (India).

The distribution of this species is remarkable. It is found in India, Ceylon, China, Japan, Sumatra and Java, but is not recorded south of the latter point till it appears again halfway down the eastern coast of Australia.

76a. **A. hyperbius inconstans** Butler. **Fig. (51)**

Cistula Entomologica, i, p. 164. 1873.

♂. Above. Forewing pale orange: a series of broad streaks across cell, and a double series of large irregular discal spots, black: a series of regular subterminal spots, and a double terminal line with a spot on each vein, black. Hindwing pale orange: two ill-defined spots in cell, black: discal, subterminal and terminal spots and lines as on forewing.

Beneath. Forewing pale orange tinged pinkish: apex broadly pale yellow: spots and lines as above, but in apical area yellow-brown instead of black: apical spots in areas 5 and 6 faintly edged silvery white. Hindwing pale yellow: a series of interrupted basal and discal lines, black edged silvery white: a series of discal spots, yellow-brown centred silvery white and basally edged with a series of broad irregular spots, silvery white: subterminal spots as above but yellow-brown and outwardly edged silvery white: terminal lines and spots as above but much narrower.

♀. Above as in male: paler: apex of forewing broadly black: terminal lines much broader and spots larger.

Beneath as in male.

Loc. Gympie. Brisbane. Richmond R. 1 2 3.9.10.12.10♂ 5♀. Urunga Ⓦ [illegible]

The sole Australian representative of a large and widespread Palaearctic genus. It is met with in northern N. S. Wales and southern Queensland: we have ourselves taken it once only, at sealevel close to the mouth of the Richmond R.

Subfamily **ACRAEINAE.**

Ovum. Much higher than wide: reticulate at apex, and from thence radiating in numerous broad flattened ribs crossed by distinct lines.

Larva. Cylindrical: with branching spines: of gregarious habit. (**Fig. L6**).

Pupa. Long, smooth and slender: thorax angulated: suspended by the tail. (**Fig. P6**).

Imago. Of moderate size: wings smoothly rounded. Forewing with twelve veins: vein 11 running free to costa: cell closed: vein 1a not forked at base. Hindwing with cell closed, and termen rounded. Antennae long and slender: eyes smooth: abdomen with a corneous pouch beneath in the female.

Range. Confined to the tropics and subtropics, reaching its highest development in Africa. A few species only occur in the Indo-Australian Region.

Genus **ACRAEA** Fabricius.

Illiger's Magazine, vi, 1807, p. 284.

Antennae about half the length of costa, with clubs long, gradual and slender. Eyes smooth. Forewing long and narrow: vein 11 from subcostal before end of cell: vein 10 from vein 7 well beyond end of cell. Hindwing with vein 6 and vein 7 arising close together, but not stalked. (**Fig. S.**).

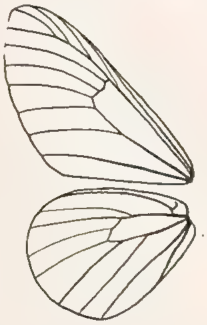


Fig. S. Wing venation of *Acraea andromacha.*

Type. *Acraea horta* Linne, from Africa.

77. Acraea andromacha Fabricius. **Fig. 6.**

Systema Entomologiae, p. 466, n. 102, 1775.

♂. Above. Forewing transparent: cell and area 1a thinly scaled cream: apex and termen dusted black: a series of basal spots, a bar across cell and a bar at end of cell, black: an interrupted series of faint discal spots, black. Hindwing cream: base and termen black: two small spots at end of cell and an irregular series of discal spots, black: a series of terminal dots, cream.

Beneath. Forewing entirely devoid of scales. Hindwing as above: terminal dots larger.

♀. Above and Beneath as in male: abdomen with a corneous pouch beneath.

Loc. Cape York 4 12. Prince of Wales Is. 5 6 7. Claudie R. 11. Cairns 6 7 8 9 10. Kuranda 6 7. Ingham 4 5 9. Townsville 6 7. Mackay 1 2 3 5 8 9. Brisbane 4 5 6 10. Stradbroke Is. 12. Blackbutt 1. Mt. Tambourine 12. Richmond R. 2 3 4 9 10 Ebor 1. Port Macquarie 10. Manning R. 3 10. Narrabri 5. Sydney 4. Blue Mts. 4. Derby. Wyndham 3 4 5. Darwin 8. Roper R. 11. 40♂ 31♀.

Toronto 4/17. Port Macquarie 3.4/15,18. Urunga Ⓦ Oct 1920.

[illegible]

Fig. 4. [illegible]

[illegible] terminal dots, ornate. [illegible] Thickening at [illegible] terminal [illegible]

Family NEMEOBIDAE.

No measurements are given, as the figure in every case is that of a butterfly of average size.

Two subfamilies occur in Australia, and each is represented by a single species only. The characters of the early life stages are given under the subfamilies, and are quoted, as we have not had personal experience of them. The forelegs are imperfect in the male, but functionally perfect in the female: the precostal spur of hindwing is present.

Subfamily LIBYTHEINAE.

Pagenstecker, Monographs Das Tierreich, 1901: Genera Insectorum, 1902.

OVUM. Ampuliform, twice as high as wide, forming a short neck or stalk close to the apex: radiate, with strong anastomosing ribs (Doherty). Regularly elliptic, with sharply rounded prominent longitudinal ribs (Scudder).

LARVA. Cylindrical, smooth or with minute bristles: head small: strongly resembles the larvae of some of the *Pieridae* (Bingham).

PUPA. Suspended by the tail: short, smooth, square, broad: not angulated (Bingham).

IMAGO. Of moderate size: wings angulate and dentate. Forewing with vein 1a with a slender fork at base: cell closed. Hindwing with cell closed. Antennae short: eyes smooth: palpi very long, stout, porrect, and closely approximate at base.

RANGE. Worldwide. A small group of species, all of a somewhat similar appearance.

Genus **LIBYTHEA** Fabricius.

Illiger's Magazine, vi, 1807, p. 284

Antennae less than half the length of costa, with clubs long, gradual and slender. Eyes smooth. Palpi more than onefourth the length of antennae. Forewing with vein 10 from subcostal before end of cell: cell closed. Hindwing with vein 3 and vein 4 arising from the same point: cell closed and termen rounded.

TYPE. *Libythea celtis* Fussely, from S. Europe.

78. **Libythea geoffroyi** Godart. (Timor).

This species ranges from the Malay Peninsula to the Loyalty Islands: it is nowhere abundant, and in Australia is an extreme rarity. We have races from New Guinea, Loyalty Is., Phillipines and the Moluccas. The sexes are always widely divergent above, but very similar beneath.

78a. **L. geoffroyi nicevillei** Olliff. **Fig. 62, 63.**

Proceedings Linnean Society N. S. Wales 1891, p. 28.

♂. ABOVE. Forewing shining lilac-blue with coppery reflections: costa, apex and termen, brown: a series of three faint subapical spots, whitish. Hindwing brown: base suffused lilac-blue: faint traces of a series of three postcellular spots, orange-brown.

BENEATH. Forewing brown: dorsum paler: apex shining lilac dusted silvery white and covered with dark brown striae: cell dull orange with a spot in end, dull white: a subcostal spot at twothirds, a pair of subterminal spots in areas 4 and 5, and a large discal spot in area 2 and extending into area 3, white. Hindwing shining lilac, covered with dark brown striae, and with faint bands and dustings of silvery white.

♀. ABOVE. Forewing brown: base and dorsum faintly orange-brown: a spot in end of cell, white: a subcostal spot at twothirds, a pair of subterminal spots in areas 4 and 5, and a large discal spot in area 2 and extending into area 3, white. Hindwing brown: base and dorsum suffused orange-brown: a faint band of three postcellular spots, orange-brown.

BENEATH as in male.

LOC. Cape York. Cooktown. Darwin 1. 1♂ 2♀.

Subfamily **NEMEOBINAE.**

Ovum. Not as high as wide: smooth: granulate or prickly: neither reticulate nor radiate in the few genera I have examined (Doherty).

Larva. Neither the larvae nor the pupae exhibit any well marked characteristic feature, but they show considerable variety (Sharp).

Pupa. Short: only slightly, if at all, angulated or fusiform: flattened towards the head: head bifid or truncately rounded in front: recumbent, attached to a leaf by the tail and a median girdle (Bingham).

Imago. Of moderate or small size. Wings of variable shape. Forewing with twelve veins: cell closed. Hindwing with nine veins: cell closed: precostal spur present. In some Indian forms the hindwing is produced at the tornus, and in others it is tailed: in some it is tailed at vein 3 and in others it is dentate.

Genus **HOLODESMUS** nov.

Antennae more than half the length of costa, with clubs long, gradual and slender. Eyes hairy. Palpi very short. Forewing with vein 11 anastomosed with vein 12 for some distance and then running free to costa: basal portion of vein 11 sometimes very slender: vein 10 from subcostal just before end of cell: cell less than half the length of wing and closed: vein 6 sometimes arising from upper apex of cell: vein 5 much longer than vein 6 or vein 4: termen straight in male and rounded in female. Hindwing with cell much less than half the length of wing and closed: termen rounded.

Type. *Holodesmus segecia* Hewitson, from New Guinea.

Hewitson placed this species in his genus *Sospita,* and gave *S. fylla* as the first species, which Scudder considers the type. Bingham placed *S. fylla* under the genus *Abisara* and sank *Sospita* as a synonym of that genus. Our species is without the angulate hindwing of *Abisara,* and it does not agree with the doubtful genus *Sospita,* for *S. fylla* has vein 11 free from vein 12. It shows some relation with *Taxila* in which vein 11 is sometimes anastomosed with vein 12, but in *Taxila* the eyes are smooth.

79. **Holodesmus segecia** Hewitson. (New Guinea).

79a. **H. segecia punctaria** Fruhstorfer. **Fig. (67) 68, (69)**

Iris, 1904, p. 144.

♂. Above. Forewing brown-black: a broad band from costa at half to vein 1a just before tornus, white: a series of two to four small subapical spots, and a minute dot on apex, white. Hindwing brown-black: a series of obscure subterminal spots, black: termen black, between veins narrowly white.

Beneath. Forewing brown-black: base grey-brown: apex and termen brown: two bars across cell grey brown: band and spots as above, but latter extending as a faint pale subterminal line, to tornus. Hindwing grey-brown: apex broadly brown-black: a spot in base of cell, brown-black, and an irregular series of discal spots, red-brown: a series of subterminal spots, black edged white: termen narrowly orange, with a spot at each vein broadly black, and between veins narrowly white.

♀. Above. Forewing brown-black: base red-brown: band, four spots, and dot as in male but broader. Hindwing red-brown: apex broadly brown-black: a series of subterminal spots, black: termen between veins narrowly white, with a broad spot on each vein, black.

Beneath as in male: pale red brown instead of grey brown.

Loc. Cape York 4 5 7 8 9 10 11. Claudie R. 1. Coen 10 12. 26♂ 18♀.

HOLODESMUS gives way to PRAETAXILA FRUHSTORFER in Seitz. Macrolepidoptera. It has only a few months priority over our genus. G.A.W. 16.6.1926 [illegible] merit any [illegible] marked characteristic feature, [illegible]

[illegible] leaf by the tail and [illegible]

[illegible] Forewing with twelve [illegible]

[illegible] and closer; [illegible] 6 somewhat [illegible] from [illegible]
[illegible] straight in [illegible] and [illegible]

[illegible] (New Guinea).

[illegible]

[illegible] grey-brown; apex and termen [illegible]
[illegible] latter extending as a faint pale subterminal line [illegible]

[illegible] of subterminal spots, black-edged [illegible]

[illegible] brown band, four spots, and [illegible]

[illegible] on each vein, black.
[illegible] of grey [illegible]

Family **LYCAENIDAE.**

No measurements are given, as the figure is in every case that of a butterfly of average size.

OVUM. Smooth and almost spherical: sometimes smooth and much flattened at base and apex: sometimes densely pitted and flattened. Deposited either singly or in clusters upon the stems, young shoots or flowerbuds of the foodplant.

LARVA. Almost invariably flattened and sluglike in shape, with the head retractile and concealed while at rest. Posterior segments usually with dorsal glands, which secrete a liquid much prized by ants: the ants consequently attend the larvae and in some cases shepherd them. The larvae feed singly or gregariously, and usually by night, sheltering during daylight in ants' nests, under bark or stones, in curled leaves or flowerbuds, or in crevices of the trunk of the foodplant. (**Fig. L285, L428**).

PUPA. Usually smooth and in transverse section ovoid (**fig. P. 428**): sometimes much flattened and with the abdomen extended in lateral ridges (**fig. P. 338**). Usually attached by the tail, and sometimes by a central girdle in either horizontal or vertical position, and with the head either upwards or downwards. Usually found in the same positions as the sheltering larvae: more rarely loose just beneath the surface of sandy soil.

IMAGO. Usually of small size and delicate structure, with dominant colour some shade of blue or brown. All legs developed for walking, but front pair less so than the others, and better developed in the female than in the male: tarsi of front legs often not articulated in the male. Body slender: head small: eyes sometimes smooth and sometimes hairy: antennae short and ending in distinct elongate clubs: palpi with third joint considerably longer in the female than in the male. Forewing usually with eleven veins (twelve in *Liphyra* only: twelve in the male and eleven in the female in *Protialmenus* only: ten in *Hypolycaena* only): vein 8 absent: vein 11 often anastomosed with vein 12 for a varying distance, sometimes touching vein 12 without anastomosis, sometimes only bent towards, but free from vein 12, sometimes running parallel with and not bent towards vein 12: vein 6 sometimes arising from upper apex of cell, and more rarely from vein 7 well beyond cell: apex and termen usually more rounded in the female than in the male. Hindwing with termen rounded or slightly dentate: with or without tail or tails: anal lobe sometimes well developed: precostal spur absent: vein 1a and vein 1b present. Males with or without a sexmark.

RANGE. Worldwide. In Australia very plentiful in the subtropical scrubs of the north. Quite a large number of species are only to be taken on Cape York Peninsula: others extend as far as the Cairns district, and many reach as far south as the northern scrub districts of N. S. Wales. Nearly all the southern species are also to be found in Queensland, the only genus not yet taken there being *Pseudalmenus.*

For the classification of the family into genera we have to depend as usual upon the structure of the imagines. Characters of the ova are of little value in Australia, for the genus *Ogyris* itself provides eggs of three widely divergent types. The larvae and pupae give but little aid, for they are mostly very similar: in the few cases where a peculiarity of shape is noticeable in the pupae, it is fortunately of great use in separating otherwise closely allied groups.

Since the Revisional Paper upon this family in Australia, published by one of us in 1903, we have made a special study of the structure. We have not confined ourselves to Australian species, but for purposes of comparison have made careful examination of a number of Indo-Australian Lycaenids, paying particular attention to types of genera. We have studied very carefully the excellent volume upon *Lycaenidae* by the late L. de Niceville (Butterflies of India, Burmah and Ceylon, Vol. III, 1890), and also the volume in "Fauna of British India," by the late Col. Bingham.

We find that structural divisions of marked utility in worldwide classification, often fail to preserve their full value when applied to a local fauna such as the Australian: or to view the question from another aspect: in classifying the species of a limited faunal area, it is difficult to decide upon divisional structural characters, that have a general application beyond the area. This is due to special local developments in some directions, and to limitations in others. The divisions we now propose, if not entirely satisfactory, will at any rate be a distinct advance upon anything previously suggested for the Australian *Lycaenidae.*

The venation of the greater number of the Australian Lycaenids is somewhat similar, but several genera show very considerable development. Vein 8 of the forewing is absent in most of the species: it has been retained in one genus (*Liphyra*) and in the males only of another (*Protialmenus*). Vein 9 in addition to vein 8, has been lost in one genus (*Hypolycaena*). The position of vein 11 in regard to vein 12 is distinctly variable: in three genera these veins are anastomosed for nearly their whole length: in other genera they fuse for a variable distance and then part: in others they are connected by a short spur: in others they approach and touch but do not fuse: in others they are bent towards each other but do not touch: and in yet other genera they run parallel.

In dividing the *Lycaenidae* into subfamilies we find that all writers agree that the genus *Liphyra* constitutes a subfamily in itself: the LIPHYRINAE. We agree with Col. Bingham in the establishment of a subfamily for the genus *Arhopala* and its allies: the ARHOPALINAE. The remaining genera fall into two natural main divisions: the THECLINAE with an anal lobe in the hindwing, and the LYCAENINAE with this lobe absent. We have separated the peculiarly Australian genus *Ogyris*, more upon account of the habits and facies of its species than upon any striking structural characters: the OGYRINAE. We also propose a new subfamily for three genera of differing habits and facies, which contain the only Australian Lycaenids with vein 6 of the forewing arising from vein 7 well beyond end of cell: the LUCIINAE. This gives us six subfamilies for the Australian *Lycaenidae,* as tabulated in the following key.

Key to the Subfamilies of *LYCAENIDAE.*

A. Vein 7 of forewing reaching costa before apex.
  a. Forewing with vein 6 arising from cell.
    a^1. Forewing with vein 5 and vein 6 not approximate at base.
      a^2. Hindwing without anal lobe: forewing with eleven veins: of small size .. *LYCAENINAE.*
      b^2. Hindwing with imperfectly developed anal lobe: forewing with eleven veins: of large size .... *OGYRINAE.*
      c^2. Hindwing with well developed anal lobe: forewing with twelve, eleven or ten veins in the male, and with eleven or ten veins in the female: of moderate size .... *THECLINAE.*
    b^1. Forewing with vein 5 and vein 6 approximate at base .... *ARHOPALINAE.*
  b. Forewing with vein 6 arising from vein 7 well beyond cell .... *LUCIINAE.*
B. Vein 7 of forewing reaching termen beyond apex: forewing with twelve veins .. *LIPHYRINAE.*

All the butterflies of the family have a more or less similar scheme of markings both above and beneath. Usually the margins of the forewing above are brown or black, and the central area some shade of blue. The comparative extent of the brown and the blue area is extremely variable: the male of *Candalides absimilis* has the dark margins linear, and the blue central area occupying nearly the whole of the wing: the male of *Bindahara isabella* has the whole of the wing black: between these two extremes are many modifications. In a few species the males show a small white area, usually below the cell. This white area is more often present in the female: it occurs below the cell in the genus *Thysonotis,* extends into the cell in some species of *Nacaduba* and *Candalides*, and occurs as a small area beyond cell in some species of *Ogyris.* In many species, especially of the *Theclinae*, the end of the cell is marked by a short dark bar, distinct upon the paler central area. The hindwing above is usually coloured as in the forewing, but with the dark margins broader and their inner edges less clearly defined: a white central area is less usual than on the forewing, but a blue central area is seldom entirely absent: there is often a subterminal series of dark spots, always clearer and darker at the tornus, and always more pronounced in the female.

[illegible] found at [illegible] [illegible] beyond the area. [illegible] [illegible] in others. [illegible] divisions [illegible] [illegible] distance upon [illegible]

[illegible] of [illegible] is [illegible]

[illegible] [illegible] both [illegible]

[illegible]

[illegible] of the forewing [illegible]

[illegible]

[illegible] eleven [illegible] of [illegible]

[illegible] forewing with eleven [illegible]

[illegible] well beyond cell [illegible]

[illegible] more or less [illegible] of [illegible]

[illegible] above are brown or black, [illegible]

[illegible] brown and the [illegible] area is [illegible]

[illegible] the [illegible] and [illegible]

[illegible] and [illegible]

[illegible] especially [illegible]

[illegible] less [illegible] on the [illegible] blue [illegible]

[illegible] in [illegible]

The shape of the hindwing is very variable, and usually slightly broader in the female: it is sometimes uniformly rounded: sometimes dentate: sometimes produced at tornus to a blunt tooth, or to a well developed or imperfectly developed anal lobe: it often has a single filamentous tail to vein 2, and sometimes a second tail to vein 1a.

The markings of the undersurface appear at first sight very intricate and complicated: but a closer study shows that each spot or bar, though variable in form and size itself, has its own definite relation to and position in the pattern-scheme of markings peculiar to the family. Sometimes the markings are obscure, even in a butterfly in the best condition, and then it is more difficult to understand them. To make them easily intelligible to the student, and in order to avoid endless repetition in the specific descriptions, we have drawn figures of typical butterflies of several of the subfamilies: these appear later, but the following general description applies to the whole family.

♂ ♀. BENEATH. Forewing with a bar across middle of cell, and sometimes extending below the cell in area 1a (in the *Theclinae* there are usually two bars across cell): a bar upon the discocellulars at the end of cell, with often a spot below it in area 2: a discal band of spots from vein 7 to vein 1a (*Lycaeninae*), or from vein 10 to vein 1a (*Theclinae*); this band is often moved abruptly nearer base at vein 4 or vein 5: a subterminal series of faint spots or margins. Hindwing with a bar across cell with one above it in area 7 and one below it in area 1a (*Lycaeninae*) or two bars across cell, with two above them in area 7, and two below them in area 1a (*Theclinae*): a bar upon the discocellulars at end of cell, with sometimes a spot below it in area 2: a curved series of discal spots from vein 8 to vein 1a: a subterminal series of faint spots or margins, often developed at tornus into two dark spots.

The spots of these markings are rarely absent, but sometimes only indicated by small obscure dots in the centres of the areas. They are often edged by a darker or a paler shade of colour, and sometimes also bordered with metallic scales. They are sometimes indicated by the paler or darker margins only, the spots themselves being nearly or quite the same shade as the colour of the wing. The margins are sometimes broad and sometimes narrowly linear, sometimes indefinite and sometimes distinctly outlined. The discal band of forewing is often broadest near costa and diminishing in width to vein 1a. The discal band of the hindwing is often very irregular: sometimes contiguous spots enlarge and coalesce. The subterminal series of spots is often only indicated by an indefinite double pale waved line (the inner and the outer edges of the spots), except in the tornal region of the hindwing where the spots are usually developed.

Subfamily **LYCAENINAE.**

OVUM. Much flattened at base and apex: in all known Australian species, densely pitted.

LARVA. Flattened and sluglike in shape, with characters and habits as described under the family.

PUPA. The pupae of many of the Australian species are still unknown, but those we have seen of *Miletus, Pseudodipsas, Lampides, Syntarucus, Catochrysops, Zizina, Neolucia, Lycaenesthes* and *Theclinesthes,* are all smooth, and in transverse section ovoid: those of *Candalides* are much flattened and with abdomen produced to lateral ridges: those of *Philiris* are ovoid in section, but have long hairs. Pupae of the remaining genera we do not yet know.

IMAGO. Usually of small size. Forewing with eleven veins: vein 11 and vein 12 sometimes anastomosed: sometimes touching, but not fused: sometimes connected by a short bar: sometimes bent towards each other but not touching: sometimes running parallel: vein 8 absent: vein 6 (except in aberrant examples of *Miletus hecalius*) arising from cell. Hindwing with termen usually rounded: sometimes slightly dentate: anal lobe absent: often with a filamentous tail to vein 2. Males rarely with a sexmark: sexes often strikingly dimorphic.

RANGE. Worldwide. All the Australian genera are found in Queensland, and a few of them are confined to the northern portion of that State: several others only reach as far south as the northern scrub districts of N. S. Wales, still fewer genera occur in Victoria and Tasmania. The only genera peculiar to Australia are *Nesolycaena* and *Neolucia*: the latter is represented by a greater number of species in southern N. S. Wales than in northern Queensland.

Key to the Genera of *LYCAENINAE.*

- A. Vein 11 of forewing anastomosed with vein 12, except at base (**Fig. Ta**).
  - *a.* Hindwing without tail.
    - *a*¹. Eyes hairy: costa of forewing nearly straight .... *Neolucia.*
    - *b*¹. Eyes smooth: costa of forewing evenly arched .... *Zizula.*
  - *b.* Hindwing with tail: eyes hairy .... *Theclinesthes.*
- B. Vein 11 of forewing anastomosed with vein 12 for a varying distance, and then running free to costa (**Fig. Tb**).
  - *a.* Eyes hairy: hindwing with or without tail.
    - *a*¹. Hindwing beneath with a broad band of metallic scales .... *Thysonotis.*
    - *b*¹. Hindwing beneath with a few metallic scales at tornus .... *Nacaduba.*
  - *b.* Eyes smooth.
    - *a*¹. Hindwing without tail: costa of forewing strongly arched .... *Eupsychellus.*
    - *b*¹. Hindwing with tail: costa of forewing evenly arched .... *Everes.*
- C. Vein 11 of forewing not anastomosed with vein 12, but connected with it by a short vein (**Fig. Tc**): eyes hairy.
  - *a.* Forewing beneath with central area white: male above pale blue .... *Pepliophorus.*
  - *b.* Forewing beneath with central area brown: male above purple .... *Jamides.*
- D. Vein 11 of forewing not anastomosed with vein 12, but touching it for a varying distance (**Fig. Td**).
  - *a.* Hindwing without tail.
    - *a*¹. Eyes hairy .... *Zizina.*
    - *b*¹. Eyes smooth .... *Zizeeria.*
  - *b.* Hindwing with tail: eyes hairy .... *Catochrysops.*
- E. Vein 11 of forewing not touching vein 12, but bent towards it (**Fig. Te**).
  - *a.* Hindwing without tail.
    - *a*¹. Eyes hairy .... *Cyaniris.*
    - *b*¹. Eyes smooth.
      - *a*². Hindwing with vein 3 from lower apex of cell: costa and termen of forewing nearly straight: colours above, black and white .... *Megisba.*
      - *b*². Hindwing with vein 3 from before lower apex of cell: costa and termen of forewing arched: colour above, brown .... *Chilades.*
  - *b.* Hindwing with tail.
    - *a*¹. Eyes hairy .... *Syntarucus.*
    - *b*¹. Eyes smooth .... *Euchrysops.*
- F. Vein 11 of forewing running parallel with vein 12 (**Fig. Tf**).
  - *a.* Eyes hairy.
    - *a*¹. Hindwing with a single filamentous tail to vein 2 .... *Lampides.*
    - *b*¹. Hindwing with three short ciliated tails to veins 1a, 2 and 3 .... *Lycaenesthes.*
  - *b.* Eyes smooth.
    - *a*¹. Forewing with vein 6 arising well apart from vein 7: costa very strongly arched *Neopithecops.*
    - *b*¹. Forewing with vein 6 arising close to vein 7: costa only slightly arched.
      - *a*². Hindwing with termen evenly rounded.
        - *a*³. Beneath white: vein 3 of hindwing arising just before lower apex of cell .. *Philiris.*
        - *b*³. Beneath brown: vein 3 of hindwing arising well before lower apex of cell .. *Nesolycaena.*
        - *c*³. Beneath white or brown, with dark terminal dots, and narrow interrupted lines: vein 3 of hindwing arising well before lower apex of cell ...... *Candalides.*
        - *d*³. Beneath white, with metallic green bands .... *Waigeum.*
      - *b*². Hindwing with termen slightly dentate: often produced at vein 1a.
        - *a*³. Beneath with brown markings .... *Pseudodipsas.*
        - *b*³. Beneath with red or orange markings, edged with metallic scales .... *Miletus.*

This key aims only at separating the genera, and not at placing them in their natural sequence. Our arrangement in the text shows their more natural order so far as a linear arrangement is possible.

[illegible] strongly [illegible]

[illegible] evenly around [illegible]

[illegible] 12 for [illegible] curving [illegible] and

[illegible] metallic [illegible]

[illegible] nickel [illegible]

[illegible] same pale blue [illegible]

[illegible]

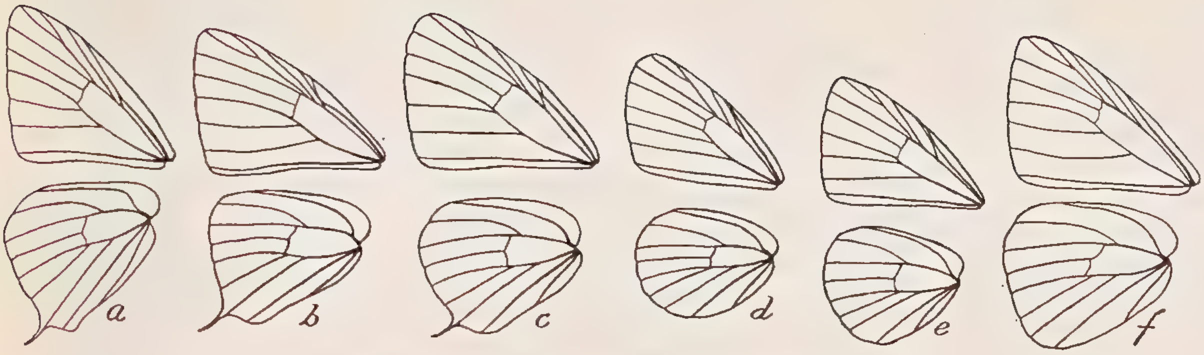


Fig. T. Wing venations of *Lycaeninae* (enlarged).

a. *Theclinesthes miskini.* b. *Nacaduba lineata.* c. *Jamides phaseli.* d. *Zizina labradus.* e. *Megisba nigra.* f. *Candalides cyprotus.*

The following figure is that of a typical butterfly of the subfamily *Lycaeninae.* It shows the venation and the markings of the undersurface in detail, and with the typical description below, should enable the student to follow without difficulty our method of specific description. It will make intelligible points that might be obscure from a study of our illustrations or of the butterfly itself.

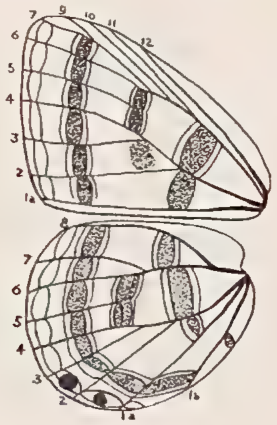


Fig. U. Diagram of *Lycaeninae,* showing arrangement of spots (enlarged).

♂ ♀. Beneath. Forewing with a bar across middle of cell, and another below it across area 1a: a bar at end of cell, and a discal band from vein 7 to vein 1a: a series of subterminal waved lines or incomplete rings. Hindwing with a spot in middle of cell, a spot above cell in area 7, and a spot below cell in area 1a: a curved discal band from vein 8 to vein 1b, with a small discal spot in area 1c: a series of subterminal waved lines or incomplete rings, those in areas 1a and 2 usually centred with a dark spot.

The discal band of the forewing is sometimes absent, but usually consists of narrow bars edged whitish: sometimes these bars are reduced to small spots in the centres of the areas. In shape this discal band varies from the strongly curved series of circular spots of *Zizeeria lysimon karsandra,* to the narrow almost straight band of coalescent bars of *Catochrysops platissa.* In genera such as *Nacaduba* and *Theclinesthes,* which show slight affinities with the *Theclinae,* the discal band begins from vein 10. The last spot of the discal band of forewing, and the spot below middle of cell, both in area 1a, are often of a different type to the others, being cloudy indefinite blotches rather than spots: the spot in area 2 near end of cell is often enlarged and cloudy: the filamentous tail to vein 2 is always tipped whitish.

Genus **EUPSYCHELLUS** Rober.

Tijdschrift voor Entomologie 1891, p. 316.

Forewing with costa strongly arched: termen evenly rounded: vein 11 anastomosed with vein 12 for a short distance, but with basal and terminal portions free. Hindwing with termen rounded: vein 5 and vein 6 close together at base. Eyes smooth.

Type. *Eupsychellus dionisius* Boisduval, from New Guinea.

80. **Eupsychellus dionisius** Boisduval. (New Guinea).

This species bears a superficial resemblance to *Neopithecops zalmora,* but is considerably larger, and structurally different. The single specimen in the Macleay Museum is the only one yet caught within Australian limits. We have many examples from the Aru Is., the Solomon Is., and New Guinea, and in these the females are very similar to the males.

80a. **E. dionisius dionisius** Boisduval. **Fig. 279.**

Voyage Astrolabe Lepidoptera, p. 82, 1832.

♂. Above. Forewing black: a large central area, reaching dorsum and almost reaching costa, white: cilia black. Hindwing black: apex broadly white: cilia black.

Beneath. Forewing white: apex broadly dull black: termen black with a series of incomplete subterminal rings, white: a dot in middle of cell and two dots in area 7, black. Hindwing white: termen to vein 6, broadly dull black with a series of incomplete subterminal rings, white: a large spot in base of area 7, black.

Loc. Darnley Is. 1♂.

Genus **NEOPITHECOPS** Distant.

Rhopalocera Malayana, p. 209, 1884.

Forewing with costa strongly arched: termen evenly rounded: vein 11 straight and free from vein 12: vein 6 arising from cell well apart from vein 7. Hindwing with termen evenly rounded. Eyes smooth.

Type. *Neopithecops zalmora* Butler, from India.

81. **Neopithecops zalmora** Butler. (India).

81a. **N. zalmora lucifer** Rober. **Fig. 280.**

Iris 1886, p. 61, pl. 4, f. 5.

♂. Above. Forewing black: a central patch, white: cilia black with tips white. Hindwing black: cilia white, at veins black.

Beneath. Forewing white: a waved subterminal line, brown: termen brown with a series of dots, black ringed white. Hindwing white: a waved subterminal line, brown: termen brown with a series of dots, black ringed white: a large spot in area 7 at apex, black.

♀. Above and Beneath as in male.

Loc. Cape York 8. Banks Is. 2 3. Hammond Is. 3. Darnley Is. 4 5 6 12. 39♂ 31♀.

Genus **MEGISBA** Moore.

Lepidoptera of Ceylon, p. 71, 1881.

Forewing with costa and termen nearly straight in the male, and only slightly arched and rounded in the female: vein 11 bent towards but free from vein 12. Hindwing with termen evenly rounded: vein 3 from lower apex of cell: in some subspecies (not Australian) with a short tail to vein 2. Eyes smooth.

Type. *Megisba malaya* Horsfield, from Java.

82. **Megisba malaya** Horsfield. (Java).

82a. **M. malaya nigra** Miskin. **Fig. 157 166 167.**

Proceedings Linnean Society N. S. Wales 1890, p. 36.

♂. Above. Forewing brown-black: a central area reaching dorsum, white: cilia brown-black. Hindwing brown-black: a central area reaching costa, white: cilia brown-black.

[illegible] black.

[illegible] series of irregular dorsal spots, [illegible] very faint [illegible] and small, [illegible]

[illegible] apex [illegible] narrowed, [illegible] of grey.

[illegible] dusted dull [illegible]

TRANS. ROY. SOC. S.A. Vol. XLVI. 1922. NEW GN. & SP. AUS. LYCAENINAE BY NORMAN B. TINDALE
(Contribution from the S. Aus. Museum)

ADALUMA n.g.

F.W. with vein 11 parallel with vein 12, vein 9 arising from vein 7, veins 1–7 lined, bordered discally with black scales; costa strongly arched; termen well rounded. H.W. evenly rounded, apex of cell acute, vein 3 arising some distance below apex of cell. Beneath white, with terminal series of dots. Antennae short, less than half expanse of wings. Eyes smooth, palpi long. Type. A. URUMELIA from Roper R.

ADALUMA URUMELIA n. sp.

♂ above. F.W. shining silky white tinged with blue; apex and termen narrowly greyblack, veins [illegible] black at termen; veins 1 to 7 bordered with black scales in discal area. Cilia black tipped with white. H.W. silky white, a terminal line black. Cilia black tipped with white.

Beneath. Silky white. F.W. with two large terminal black spots in [illegible]; terminal line black. H.W. with a terminal series of round black dots, terminal line black. Cilia black tipped with white, at [illegible] white. Antennae short, well clubbed, [illegible], tipped with white; palpi long, [illegible]. Exp. 30mm.

Loc. Roper R. N.T. McL[illegible] [illegible] 1 [illegible], 1 fragmentary, [illegible] between [illegible]

Beneath. Forewing white: a spot in cell, a bar at end of cell, and an interrupted discal line, faintly brown: costa faintly brown, with a series of small dots, brown-black: termen faintly brown with a series of spots, brown ringed white. Hindwing white: a curved series of three basal spots in area 1c, in cell, and in area 7, black: a bar at end of cell, brown, with a spot below in area 1b, black: a spot in area 7 at apex, black: an interrupted discal band, brown: termen faintly brown with a series of spots, brown ringed white, those in areas 1a and 2 brown-black.

♀. Above as in male: white areas larger: costa more arched and termen more rounded.

Beneath as in male.

Loc. Cape York 1 2 3. Cooktown 1 10 11 12. Cairns 7 8 11. Kuranda 1 2 3 4 5 6 8 10 11 12. Atherton 1 3 12. Herberton 1. Mt. Molloy 12. 33♂ 27♀.

The size of the white areas above is somewhat variable, but so far as can be judged from our own long series, this variation is not seasonal.

Genus **CYANIRIS** Dalman.

Konliga Vetenskaps Academiens Handlingar, p. 63, 94, 1816.

Forewing with vein 11 and vein 12 only slightly bent towards each other. Hindwing with termen evenly rounded. Eyes hairy.

Type. *Cyaniris argiolus* Linne, from Europe.

Many species of this genus occur in the western portion of the Indo-Malayan Region, but so far only the one small species has been taken in Australia.

83. **Cyaniris tenella** Miskin. **Fig. 168, 169, 170.**

Synonymical Catalogue Rhopalocera Australia, p. 63, 1891.

♂. Above. Forewing pale blue: costa narrowly and termen broadly, dull black: a central area, not quite reaching dorsum, white: cilia dull black, with tips faintly whitish at tornus. Hindwing white: base and area 1a, pale blue: termen dull black with a series of rings, whitish: cilia dull black with tips whitish.

Beneath. Forewing silky white: a faint streak at end of cell, a series of irregular discal spots, and a series of faint terminal spots, pale brown. Hindwing silky white: a series of four basal spots, in area 7, lower edge of cell, area 1a, and area 1c, brown-black: a very faint streak at end of cell, brown: a very irregular series of small discal spots, brown: termen with a series of faint spots, brown.

♀. Above. Forewing dull black: base, not reaching costa, dull blue: a central area reaching dorsum, white: cilia dull black. Hindwing as in male: base and area 1a, obscurely dull black.

Beneath as in male.

Loc. Kuranda 2 3 4 5 6 7. 34♂ 23♀.

Genus **NESOLYCAENA** Waterhouse and Turner.

Proceedings Linnean Society N. S. Wales 1904, p. 801 (1905).

Forewing with vein 11 straight and free from vein 12: vein 6 arising from upper apex of cell. Hindwing with termen rounded: vein 3 from well before lower apex of cell: vein 1a very short. Eyes smooth: antennae very short.

Type. *Nesolycaena albosericea* Miskin.

Both in structure and appearance this species has affinities with the *Pieridae*.

84. **Nesolycaena albosericea** Miskin. **Fig. 184, 193.**

Synonymical Catalogue Rhopalocera Australia, p. 65, 1891.

♂. Above. Forewing silky white: apex and termen narrowly dull black: cilia grey. Hindwing silky white: a terminal line, dull black: cilia grey.

Beneath dull brown.

♀. Above. Forewing silky white tinged blue: base dusted dull blue: apex broadly, and termen, dull black: cilia grey. Hindwing silky white tinged blue: base dusted dull blue: termen obscurely grey: cilia grey.

Beneath dull brown.

Loc. Expedition Range. Eidsvold 1 2 3 10 11 12. Stradbroke Is. 9 10. 10♂ 7♀.

This very interesting species is distinguished by its uniform colour and entire absence of markings beneath.

Genus **PHILIRIS** Rober.

Tijdschrift voor Entomologie 1891, p. 317.

Forewing with costa almost straight: termen nearly straight in the male and but slightly rounded in the female: vein 11 straight and free from vein 12: vein 6 arising close to vein 7. Hindwing with termen rounded: vein 3 arising close to vein 4. Eyes smooth: palpi shorter than in *Candalides*.

Type. *Philiris ilias* Felder, from Amboina.

This genus only differs from *Candalides* in minor points of structure, but is easily distinguished by its general appearance, and its separation relieves that overburdened genus. The pupae are widely different from those of *Candalides*, and provide characters of distinct generic value (Proc. Linn. Soc. N.S.W. 1912, p. 699).

85. **Philiris ilias** Felder. (Amboina).

85a. **P. ilias innotatus** Miskin. **Fig. 173, 174.**

Entomologists' Monthly Magazine 1874, p. 165.

♂. Above. Forewing purple: apex broadly, and termen, brown-black: cilia brown-black with tips white. Hindwing purple: costa and termen brown-black: cilia white, at veins brown-black.

Beneath. Forewing silky white. Hindwing silky white: a terminal line, with a dot at each vein, black: a minute, sometimes obscure, dot in area 1b at about half, black.

♀. Above. Forewing brown-black: a variable central area, reaching base and dorsum, pale blue, towards base bright blue: cilia brown-black with tips white. Hindwing brown-black: base faintly dusted blue: cilia white, at veins brown-black.

Beneath as in male.

Loc. Cape York 3 4 5 8 10 11. Kuranda 2 3 4 5 10 12. Mackay 1. Brisbane 3. Byron Bay 3. Richmond R. 1 2 3 457. 39♂ 25♀.

86. **Philiris kurandae** Waterhouse. **Fig. 175, 176, 177.**

Proceedings Linnean Society N. S. Wales 1902, p. 651.

♂. Above. Forewing dull purple: costa, apex broadly, and termen, brown-black: cilia brown-black with tips white. Hindwing dull blue: costa dull black: termen narrowly black: cilia white, at veins dull black.

Beneath. Forewing silky white. Hindwing silky white: tornus with a terminal line, black.

♀. Above. Forewing blue: costa, apex and termen, brown-black: cilia brown-black with tips white. Hindwing blue: costa faintly, termen variably, and veins 2, 3 and 4, brown-black: cilia white.

Beneath as in male.

Loc. Cairns 1 11. Kuranda 1 3 4 5 6 9 10 12. 19♂ 21♀.

87. **Philiris diana** nov. **Fig. 183, 270, 271.**

♂. Above. Forewing dull purple: apex and termen narrowly brown-black: an obscure central patch, white: cilia brown-black with tips white. Hindwing dull purple: costa whitish: termen narrowly black: cilia brown-black with tips white.

Beneath silky white: tornus of hindwing with a dot at each vein, black.

♀. Above. Forewing dull black: a large central area, reaching dorsum, white: base blue: cilia dull black with tips white. Hindwing dull black: apex broadly, and costa, white: cilia dull black with tips white.

Beneath as in male.

Loc. Kuranda 3 4 5. 10♂ 7♀.

This is the largest species of the genus. In certain angles of light the central white area of forewing above in the female, is tinged blue.

88. **Philiris kamerungae** Waterhouse.

88a. **P. kamerungae kamerungae** Waterhouse. **Fig. 171, 172.**

Proceedings Linnean Society N. S. Wales 1902, p. 650.

♂. ABOVE. Forewing blue tinged purple: costa, apex and termen, broadly dull black: an obscure central patch, white: cilia black with tips whitish. Hindwing blue tinged purple: apex whitish: termen, and area 1b, black: cilia white.

BENEATH. Forewing silky white. Hindwing silky white: a dot in area 1b at about half, black: tornus with a terminal line, black.

♀. ABOVE. Forewing dull black: a variable central area, not quite reaching dorsum, white faintly edged blue: base dusted blue: cilia dull black with tips whitish. Hindwing dull black: apex broadly white: cilia white.

BENEATH as in male.

LOC. Cairns 9. Kuranda 1 2 3 4 5 6 9 10 11 12. 22♂ 24♀.

88b. **P. kamerungae lucina** nov.

♂. ABOVE. Forewing blue tinged greenish: costa, apex and termen, broadly dull black: an obscure central patch, white: cilia black with tips whitish. Hindwing blue tinged greenish: apex whitish: termen and area 1b, broadly dull black: cilia white.

BENEATH. Forewing silky white. Hindwing silky white: a dot in area 1b at about half, black: tornus with a terminal line, black.

♀. ABOVE. Forewing dull black: a central area, not quite reaching vein 1a, white faintly edged greenish: base of area 1a, dusted greenish: cilia dull black with tips whitish. Hindwing dull black: apex faintly whitish: cilia white.

BENEATH as in male.

LOC. Cape York 3 4 7 8 10. 3♂ 3♀.

This takes the place of *P. kamerungae kamerungae* in the far north. It may be recognised by the broader dark margins and greenish colour of the male, and the restricted white areas and greenish basal scales of the female.

Genus **CANDALIDES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 73, 1816.

Forewing with vein 11 straight and free from vein 12: costa more arched and termen more rounded than in *Philiris*. Hindwing rounded: vein 3 arising well before lower apex of cell. Eyes smooth: palpi longer in *Philiris*.

TYPE. *Candalides xanthospilos* Hubner.

The pupae of *C. absimilis*, *C. gilberti*, *C. heathi* and *C. hyacinthina* are strikingly different from the usual Lycaenid pupae. They are much flattened, with the abdomen produced to lateral ridges, and the head furnished with two flattened processes. (**Fig. P338**).

The species grouped under *Candalides* form a somewhat heterogeneous collection. The type stands by itself with *C. heathi* its nearest ally. *C. absimilis* (the type of *Holochila* Felder, preoccupied), *C. gilberti*, *C. helenita* and *C. margarita* form a natural group comprising many species in New Guinea and the islands to the westward. Another group, also occurring in New Guinea and the Aru Islands, is formed by *C. erinus*, *C. hyacinthina* and *C. acasta*: these would belong to Swainson's genus *Erina* (type *C. erinus*). *C. heathi* and *C. cyprotus* are somewhat isolated, though *heathi* is clearly allied to *xanthospilos* and *cyprotus* to *hyacinthina*.

89. **Candalides xanthospilos** Hubner. **Fig. 185, 186, 272.**

Sammlung Exotischer Schmetterlinge 1806, pl. 99.

♂. ABOVE. Forewing brown-black: a central patch, bright yellow margined dull purple: cilia black with tips white. Hindwing brown-black tinged dull purple: cilia white.

BENEATH. Forewing silky white: termen often with a series of dots, black. Hindwing silky white: two dots at end of cell, and a dot in area 1a below middle of cell, black: termen with a series of dots, black.

♀. Above. Forewing as in male: yellow central patch paler and not bordered with purple. Hindwing brown-black: cilia white.

Beneath as in male.

Loc. Kuranda 1. Almaden 3. Herberton 12. Brisbane 8 11 12. Stradbroke Is. 10. Richmond R. 1 9.10. Port Macquarie 10. Manning R. 3. Sydney 1 2 3 8 9 10 11 12. Illawarra 1 2 3 9 10 11 12. Blue Mts. 1 10. Moruya 12. Lake Tyers 12. 27♂ 23♀. Pt Macquarie 3/12 1915

Figure 272 is drawn from an interesting example from Kuranda, in which the pale area of the forewing is reduced in size, and the black marginal dots beneath are considerably larger.

90. Candalides heathi Cox.

90a. C. heathi heathi Cox. Fig. 382, (383.)

Entomologist, 1873, Vol. IV, p. 402.

♂. Above. Forewing bronze brown: termen very narrowly brown-black: cilia brown-black with tips whitish. Hindwing bronze brown: costa and termen very narrowly brown-black: cilia brown-black with tips whitish.

Beneath. Forewing silky grey-white: termen with a series of small sometimes minute dots, black. Hindwing silky grey-white: termen with a series of dots, black.

♀. Above. Forewing dull brown: an obscure central area, reaching base and dorsum, dull bluish purple: termen very narrowly brown-black: cilia brown-black, at tips whitish. Hindwing dull brown tinged bluish purple: costa and termen obscurely brown-black: cilia brown-black with tips whitish.

Beneath as in male.

Loc. Petford 2. Brisbane 2 10 11. Sydney 1 2 3 9 10 11 12. Illawarra 1 2 3 12. Mt. Kosciusko 1. Narracan 12. Macedon 11. Adelaide (type). Watheroo 11. Geraldton 11. 35♂ 21♀.

91. Candalides cyprotus Olliff. Fig. 333, 334, (335.)

Proceedings Linnean Society N. S. Wales 1885, p. 717.

♂. Above. Forewing coppery brown: termen narrowly brown-black: a series of patches of sexscales on vein 1a at half, and on bases of postcellular veins, purplish black: cilia brown-black, with tips whitish but at veins brown-black. Hindwing coppery brown: base dull black: costa and termen narrowly brown-black: cilia whitish, at veins brown-black.

Beneath. Forewing grey-brown: a dot at end of cell, and a series of obscure discal and subterminal dots, brown: a terminal line, brown. Hindwing grey-brown: a dot in cell, and a series of obscure basal, discal and subterminal dots, brown.

♀. Above. Forewing bronze brown: a central area, reaching base and dorsum, purple: termen very narrowly brown-black: cilia as in male. Hindwing bronze brown: a central area, reaching base, purple: costa broadly and termen narrowly, brown-black: cilia as in male.

Beneath as in male.

Loc. Brisbane 2 3 9 10. Tuncurry 9 10. Sydney 8 9 10 11. Illawarra 8 9 12. Blue Mts. 10 11. Wilson's Inlet 11. Kalamunnda 9. Waroona 11. Geraldton 11. 41♂ 19♀.

At certain angles of light, the coppery brown of the male is tinged purplish. We have seen one aberrant female in which the central area of forewing is pale blue.

92. Candalides gilberti Waterhouse. Fig. 266, 267.

Proceedings Linnean Society N. S. Wales 1903, p. 181.

♂. Above. Forewing grey-blue tinged purple: apex and termen narrowly lined black: cilia black with tips white: vein 1a and postcellular veins lined with raised sexscales. Hindwing grey-blue tinged purple: termen narrowly lined black: cilia black with tips white.

Beneath. Forewing silky white: a faint streak at end of cell, and a series of faint discal streaks, brown-black: an obscure waved subterminal line, and a series of terminal dots, brown-black. Hindwing silky white: markings typical, brown-black: a subterminal waved line, brown-black, and a series of terminal dots, black.

Toronto (W.D.F.)   Urunga (W) Oct 1920.

Daytrap V. (R McD) 8.9 1917   Kosciusko 1-8 Dec 1921 (G.A.W.) alpine subreg. (Tillyard had taken this a week earlier)

[illegible]

[illegible] sternum very narrowly brown [illegible] or ochre-black [illegible] and [illegible] narrowly [illegible]

[illegible] a series of small [illegible] dots, black.

[illegible] an obscure [illegible] area, [illegible] dorsum [illegible] brown-black; [illegible] brown-black, [illegible] brown-black; [illegible]

[illegible] Sydney [illegible] Parramatta [illegible] Wattamolla [illegible]

[illegible] Fig. [illegible]

[illegible] dots, black.

[illegible] end of coil and a series of [illegible]

♀. Above. Forewing grey-blue: costa, apex and termen, broadly black: cilia as in male. Hindwing grey-blue: costa and termen black: cilia as in male.

Beneath as in male.

Loc. Darwin 2 4 8 9 11. Melville Is. 12♂ 10♀.

The figures are drawn from the types, both of which are in poor condition. The species has since been bred by Mr. F. P. Dodd, and the male is very distinct from *C. absimilis.* This is the only one of the *absimilis* group without a white area on forewing above in the female.

93. **Candalides margarita** Semper. **Fig. 179, 188.**

Museum Godeffroy, Lepidoptera, p. 160, 1878.

♂. Above. Forewing dull grey-blue tinged purple: apex and termen lined black: cilia black with tips white: vein 1a and postcellular veins lined with raised sexscales. Hindwing dull grey-blue tinged purple: termen lined black: cilia black with tips whitish.

Beneath. Forewing silky white: a faint streak at end of cell, and a series of faint discal streaks brown: an obscure waved subterminal line, and a series of faint terminal dots, brown. Hindwing silky white: markings typical, faintly brown-black: an obscure waved subterminal line, brown, and a series of faint terminal dots, black.

♀. Above. Forewing dull black: base dull blue: a large central patch, white: cilia black with tips white. Hindwing dull black: base dull blue: a central patch, reaching apex, white: cilia black with tips white.

Beneath as in male.

Loc. Cape York 5 9 10. Thursday Is. 5. Prince of Wales Is. 5. Cairns 7 10 11. Kuranda 1 2 4 5 9 10 11 12. Herberton 1 12. Ingham 5. Mackay 5. 46♂ 29♀.

94. **Candalides absimilis** Felder. **Fig. 178, 181, 187.**

Verhandlungen Zoologisch-botanischen Gesellschaft Wien 1862, p. 490.

♂. Above. Forewing dark grey-blue tinged purple: apex and termen lined black: cilia black with tips faintly whitish. Hindwing dark grey-blue tinged purple; termen lined black: cilia black with tips white.

Beneath. Forewing silky white: a faint streak at end of cell, and a series of very faint discal streaks, brown: a very obscure waved subterminal line, and a series of terminal dots, brown. Hindwing silky white: markings typical, faintly brown-black: an obscure waved subterminal line, and a series of very faint terminal dots, brown.

♀. Above. Forewing dull black: base dusted dull purplish: a large central patch, white: cilia black with tips faintly white. Hindwing dull black with base dull purplish: a central patch, reaching to vein 7, white: cilia black with tips white.

Beneath as in male.

Loc. Cairns 11. Kuranda 1 3 4 9 10 11 12. Mackay 1 2 3 4 9 11. Brisbane 2 3 5 9 10. Richmond R. 1 2 3 5 9 10. 11 12. Manning R. 3. Sydney 1 2 8 11 12. Illawarra 2 3. Blue Mts. 1. Victoria. 39♂ 41♀. Toronto (W.D.F)

We think it possible two distinct species are included under this name. Northern examples appear to have more purple in the forewing of the male, and the sexscales are widely distributed: southern males have a bluer tint, and the sexscales are barely indicated. We can however find no points of difference in the females, so hesitate to divide them till more material is available and constant characters can be detected.

95. **Candalides helenita** Semper. **Fig. 180, 189, 190.**

Museum Godeffroy, Lepidoptera, p. 161, 1878.

♂. Above. Forewing grey-blue tinged greenish: apex and termen lined black: cilia black with tips faintly white: vein 1a and postcellular veins lined with raised sexscales. Hindwing grey-blue tinged greenish: termen lined black: cilia black with tips white.

Beneath. Forewing silky white: markings as in *absimilis* but very faintly indicated. Hindwing silky white: faint indications only of typical markings, brown: waved subterminal line and terminal dots very faint.

♀. Above. Forewing dull black: a large central patch, white: cilia black with tips faintly whitish. Hindwing grey-black: a central patch, reaching apex, white: cilia black with tips faintly whitish.

Beneath as in male.

Loc. Cape York 1 2 3 4 5 8 9 10 11 12. Prince of Wales Is. 6. Claudie R. 1. Cooktown 12. Cairns 10 11. Kuranda 1 2 3 4 5 6 7 8 9 10 11 12. 36♂ 39♀.

This is the most easily recognised of the several species allied to *C. absimilis*. The green colour of the male above, and the absence of the blue scales on female above, separate it decisively: the dark streaks beneath are much less distinct than in its close allies.

96. **Candalides erinus** Fabricius. **Fig. 342, 343.**

Systema Entomologiae, p. 525, 1775.

♂. Above. Forewing bronze brown: apex and termen obscurely brown: cilia brown with tips faintly whitish. Hindwing bronze brown: termen obscurely and narrowly brown: cilia whitish.

Beneath. Forewing greyish white: a faint bar at end of cell, and an interrupted faint discal line, brown: a series of obscure subterminal spots, brown, those in areas 1a and 2, large and black. Hindwing greyish white: markings typical, small, obscure, grey-brown.

♀. Above. Forewing dull brown: cilia brown with tips faintly whitish. Hindwing dull brown: cilia whitish.

Beneath as in male.

Loc. Cape York 2 3 4 5 11. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 5. Claudie R. 1. Cooktown 10 11. Cairns 6 7. Kuranda 1 2 3 4 5 6. Herberton 1. Ingham 5. Townsville 3 5 7. Mackay 9. Brisbane 2 3 9. Darwin 3 4 9. 61♂ 36♀. Port Macquarie 3.4/1917.

In this species blue scales above are entirely absent in the female.

97. **Candalides hyacinthina** Semper.

The larvae of this species feed upon the parasitic climbing plant, *Cassythae*, and the butterflies are usually found in the neighbourhood of the foodplant.

97a. **C. hyacinthina eugenia** nov. **Fig. 340, 341.**

♂. Above. Forewing dull bronze brown: termen narrowly brown: cilia dull brown with tips faintly greyish. Hindwing dull bronze brown: termen narrowly brown: cilia dull brown with tips greyish.

Beneath. Forewing grey: a faint streak at end of cell, and a faint interrupted discal line, brown: a series of subterminal dots, brown, those in areas 1a and 2, large and black. Hindwing grey: markings typical, small, obscure, brown.

♀. Above. Forewing bronze brown tinged purple: costa, apex and termen, dark brown: cilia as in male. Hindwing bronze brown tinged purple: costa and termen dark brown: cilia as in male.

Beneath as in male.

Loc. Kuranda 1 2 3 4 5 7 11 12. Atherton 1. Rockhampton 12. 9♂ 3♀.

Though it approaches *C. erinus* beneath, this is the northern race of *C. hyacinthina*.

97b. **C. hyacinthina hyacinthina** Semper. **Fig. 338, 339.**

Museum Godeffroy Lepidoptera, p. 161, 1878.

♂. Above. Forewing bronze brown tinged purple: termen obscurely brown: cilia dull brown with tips faintly whitish. Hindwing bronze brown tinged purple: costa and termen obscurely brown: cilia dull brown with tips greyish.

Beneath. Forewing grey-brown: a faint streak at end of cell, and a faint interrupted discal line, brown: a series of subterminal dots, brown, those in areas 1a and 2, large and brown-black. Hindwing grey-brown: markings typical, small, obscure, brown.

♀. Above. Forewing dull brown-black: a variable central area, reaching base and dorsum, purple: cilia as in male. Hindwing dull brown-black: a variable central area, obscurely purple: cilia as in male.

Beneath as in male.

Loc. Brisbane 1 2. Port Macquarie 10. Sydney 1 2 8 9 10 11 12. Illawarra 1 2 3 9 12. Blue Mts. 1 8 9 10 11. Pambula 12. Wandin 1 10 11 12. Healesville 1. Gisborne 12. 40♂ 21♀.
Toronto 4/17. Port Macquarie 4/1918. Moe V. 12/18 1/1919 Richmond R. 1. 9.10/1922

Richmond R. 9.10. (GAW 22)

[illegible]

[illegible] of cell [illegible] on integument [illegible]

[illegible] typical small [illegible]

[illegible] than one female [illegible]

[illegible] 5, 6, 7. Hooks [illegible] 2 [illegible]

[illegible] absent in the [illegible]

[illegible] purple [illegible] areas and [illegible] dark [illegible]

[illegible] brown [illegible] and [illegible]

[illegible] Reichenow, 18[illegible]

[illegible] brown [illegible]

[illegible]

Porch 17.10.23 MJd. Moe V. 1/19. Toronto 4/5

97c. C. hyacinthina simplexa Tepper. Fig. 336, 337.

Transactions Royal Society South Australia 1882, p. 30, pl. 2, f. 10.

♂. Above. Forewing dull grey-black: a central area, reaching base and dorsum, dull blue faintly tinged purple: cilia dull brown-black with tips greyish. Hindwing dull blue faintly tinged purple: costa broadly and termen, dull grey-black: cilia brown-black with tips whitish.

Beneath. Forewing ashy brown: a faint streak at end of cell, and a faint interrupted discal line, grey-brown: a series of subterminal dots, grey-brown, those in areas 1a and 2, large and dull black. Hindwing ashy brown: markings typical, small, obscure, grey-brown.

♀. Above. Forewing as in male: central blue area slightly paler. Hindwing as in male.

Beneath as in male.

Loc. Sea Lake 12. Birchip 1 8 9. Dimboola 11. South Australia (type). Geraldton 11. 26 ♂ 8 ♀.

This is the western race of *C. hyacinthina*. It occurs in the northwestern areas of Victoria, in South Australia, and in West Australia. *C. cyanites* Meyrick is a synonym.

98. Candalides acasta Cox. Fig. 344, 345.

Entomologist, 1873, Vol. IV, p. 402.

♂. Above. Forewing bronze brown faintly tinged purple: termen obscurely brown: cilia dull brown with tips greyish. Hindwing bronze brown faintly tinged purple: costa and termen obscurely brown: cilia greyish.

Beneath. Forewing grey: a faint spot in cell and two faint spots at end of cell, brown-black: a series of discal dots, and a series of subterminal spots, brown-black, those in areas 1a, 2 and 3, large and very obscure. Hindwing grey: markings typical, small, obscure, brown-black: a faint subapical suffusion, brown-black.

♀. Above. Forewing dark brown: an obscure central area, reaching base and dorsum, tinged purple: cilia as in male. Hindwing dark brown tinged purple: costa and termen obscurely brown: cilia as in male.

Beneath as in male.

Loc. Brisbane 1 [illegible]10. Stradbroke, Is. 10. Sydney 1 2 3 4 8 9 10 11 12. Illawarra 1 2 3 11. Blue Mts. 1 2 11. Wandin 8 11 12. Melbourne 3 11 12. Gisborne 1 2 9 10. Hobart 1 12. Strahan 12. Adelaide 11. Wilson's Inlet 3 11 12. Waroona 10 11. Watheroo 11. Carnarvon. 46 ♂ 19 ♀.

We consider *acasta* the earliest name for this species: it has also been called *anita* Semper, *maerens* Rosenstock and *canescens* Miskin.

Genus PSEUDODIPSAS Felder.

Wiener Entomologische Monatschrift 1860, iv, p. 243.

Forewing with termen in male almost straight, and in female slightly rounded: vein 11 straight and free from vein 12. Hindwing with termen bluntly dentate. Eyes smooth.

Type. *Pseudodipsas eone* Felder, from the Aru Is.

Some of the species of this genus are marked beneath with a pattern similar to that of *C. absimilis*, with which species they evidently have affinities.

99. Pseudodipsas eone Felder. (Aru).

We have before us four examples of each sex of the typical race from the Aru Islands. Compared with the Australian race the males have four instead of three subterminal spots, and a more prominent terminal line: the females have the orange area of the hindwing above much larger and darker in colour.

99a. P. eone iole nov. Fig. 236, 237, 238.

♂. Above. Forewing black: cilia black. Hindwing black: a series of three obscure subterminal dots in areas 1a, 2 and 3, white: termen with an interrupted line from tornus to vein 5, white: cilia white, at veins black.

Beneath. Forewing dull silky white: markings typical, narrow, yellow-brown: a waved subterminal line, and a series of obscure terminal spots, yellow-brown: usually a spot in cell near base, brown-black. Hindwing dull silky white: markings typical, narrow, yellow-brown: a waved subterminal line, brown: a series of obscure terminal dots, yellow-brown, those in areas 1b and 2, black crowned yellow-brown.

♀. Above. Forewing dark brown: cilia brown. Hindwing dark brown: tornus to vein 5 broadly pale orange, with three terminal spots, brown-black: termen with an interrupted line to vein 5, white: cilia whitish, at veins dark brown.

Beneath as in male.

Loc. Cape York 2 3 4 5 8 11. Prince of Wales Is. 5 6. Claudie R. 1 11. Kuranda 1 3 9 10 11 12. Atherton 11. Herberton 12. Innisfail. 13♂ 23♀.

100. **Pseudodipsas cephenes** Hewitson. **Fig. 261, 262, 263.**

Transactions Entomological Society London 1874, p. 344: Illustrations Diurnal Lepidoptera, Lycaenidae, p. 219 pl. 89, fig. 3, 4, 1878.

♂. Above. Forewing black: a variable central area, sometimes reaching base and dorsum, metallic blue: cilia brown-black. Hindwing black: cell faintly dusted metallic blue: a series of subtornal spots, black edged whitish: cilia whitish, at veins brown-black.

Beneath. Forewing greyish white: markings typical, broad, pale brown edged brown: a waved subterminal line, and a series of obscure terminal spots, brown. Hindwing greyish white: markings typical, pale brown edged brown: a waved subterminal line, brown: a series of obscure terminal spots, brown, those in areas 1b and 2, black crowned orange-brown.

♀. Above. Forewing brown-black: a large central area, reaching base and dorsum, pale metallic blue: cilia brown-black. Hindwing brown-black: a central area, faintly dusted metallic blue: a series of subterminal spots, black edged whitish: cilia whitish, at veins brown-black.

Beneath as in male.

Loc. Kuranda 1 2 3 4 9 10 11 12. Atherton 3 11. Mackay 2. Brisbane 2. Southport 2. Richmond R. 1 2 4 9 10. 8♂ 22♀.

This is an Australian species erroneously recorded by Hewitson as from India. His name takes precedence of *P. fumidus* Miskin, (Proc. Linn. Soc. N. S. Wales 1912, p. 699).

101. **Pseudodipsas brisbanensis** Miskin.

Very few examples of this rare Lycaenid are yet known. Three of the four males taken in N. S. Wales differ markedly from the Victorian males, so two races are definitely established, and others may be expected as more material becomes available. Two specimens only have so far been taken in Queensland, one of which is the type female and the other a diminutive male from Cape York. The type female is somewhat larger, but otherwise scarcely differs from the N. S. Wales females.

101a. **P. brisbanensis brisbanensis** Miskin. **Fig. 239, 240, 241, 243.**

Transactions Entomological Society London 1884, p. 95.

♂. Above. Forewing bronze brown: base broadly coppery: termen lined brown: cilia greyish. Hindwing bronze brown tinged coppery: termen narrowly brown-black with a narrow interrupted line at tornus, whitish: a pair of obscure subtornal spots, brown-black very faintly crowned dull orange: cilia greyish, at veins brown-black.

Beneath. Forewing dull brown: markings typical, obscure, dull brown edged brown and then very faintly greyish. Hindwing dull brown: markings typical, obscure, dull brown edged brown and then very faintly greyish: a pair of subtornal spots, brown-black broadly crowned bright orange.

♀. Above. Forewing bronze brown: an obscure central area, reaching base and dorsum, bluish: termen lined dark brown: cilia grey-brown. Hindwing bluish: costa broadly and apex very broadly, bronze brown: termen dark brown with a narrow line at tornus, bluish white: a pair of obscure subtornal spots, brown-black: cilia whitish, at veins brown-black.

Beneath as in male.

Loc. Cape York. Brisbane. Newcastle. Sydney 10. Illawarra 10. Blue Mts. 1. Pambula 12. 5♂ 4♀. Toronto 4/17 Port Macquarie 3/1918

The description of the male is drawn from three specimens from Pambula and Newcastle. Our fourth male (**fig. 240**) is from Sydney and is without the basal coppery suffusion, but (though a worn example) it is very much darker than the males of the Victorian race *cyrilus*. Our fifth male is a diminutive specimen from Cape York, of a pale dull grey-brown colour above, and with markings beneath unusually broad. The description of the female is drawn from the type.

Toronto W.D.Fylma. 29.4.20.

[illegible] Wing. [illegible] Claudie R. 1 11. Sarauda 1 3 9 16 [illegible]
[illegible] Ba. 23 [illegible].

[illegible] Eggs typical, broad, pale brown edged [illegible] to apical spots, brown. [illegible] greyish white [illegible]

[illegible] large central area, reaching base and dorsum, pale [illegible]

[illegible] whitish, at veins brown black.

[illegible] regarded by Hewitson as fem. [illegible] His [illegible] N. S. Wales 1914 p. 699.

[illegible] specific marking; [illegible] brown; [illegible]

[illegible] spots, brownish-[illegible]

[illegible] spots, brownish [illegible]

[illegible] (Hampson, [illegible]

[illegible] basal [illegible] of the Victorian [illegible]

101b. **P. brisbanensis cyrilus** Anderson & Spry.

Victorian Naturalist 1897, Vol. XIV, p. 5, 6, 7, (figures).

♂. Above. Forewing pale bronze brown: termen lined dark brown: cilia grey-brown. Hindwing pale bronze brown: termen narrowly brown-black, with a narrow interrupted line at tornus, bluish white: a pair of obscure subtornal spots, brown-black: cilia whitish, at veins brown-black.

Beneath. Forewing pale brown: markings typical, pale brown edged brown and then faintly greyish. Hindwing pale brown: markings typical, pale brown edged brown and then faintly greyish: a pair of subtornal spots, brown-black crowned orange.

♀. Above. Forewing pale bronze brown: a central area, reaching base and dorsum, bluish: a bar at end of cell, pale bronze brown: termen lined dark brown: cilia grey-brown. Hindwing bluish: costa broadly, and apex very broadly, pale bronze brown: termen narrowly dark brown with a narrow line at tornus, bluish white: a pair of obscure subtornal spots, brown-black: cilia whitish, at veins brown-black.

Beneath as in male: discal band of forewing broader.

Loc. Springvale 2 12. 3♂ 2♀.

The male is without any trace of the coppery suffusion so pronounced in *brisbanensis.* Pupae have been found beneath the bark of the trunks of Eucalypts.

102. **Pseudodipsas myrmecophila** Waterhouse & Lyell.

102a. **P. myrmecophila myrmecophila** Waterhouse & Lyell. **Fig. 242, 830.**

Victorian Naturalist 1913, Vol. XXIX, p. 156-159. (figures).

♂. Above. Forewing dark bronze brown: termen lined brown-black: cilia grey-brown. Hindwing dark bronze brown: base shading to brown-black: termen narrowly brown-black with a narrow interrupted line, broadening towards tornus, bright blue: a pair of obscure subtornal spots, brown-black: cilia whitish, at veins brown-black.

Beneath. Forewing grey-brown: markings typical, pale brown edged brown-black and then whitish. Hindwing grey-brown: markings typical, pale brown edged brown-black and then whitish: termen with a series of obscure spots, orange, those towards tornus centred brown-black.

♀. Above. Forewing dark bronze brown: a broad central area, reaching base and dorsum, blue: termen lined brown-black: cilia grey-brown. Hindwing blue: costa and apex broadly dark bronze brown: termen narrowly brown-black with a narrow line, broadening towards tornus, blue: a pair of obscure subtornal spots, brown-black: cilia whitish, at veins brown-black.

Beneath as in male: spots of discal band broader.

Loc. Sydney 1 2 3 10. Wandin 11. Ocean Grove 10 11 12. 43♂ 37♀.

Pupates within the galleries of the nests of the ant *Iridomyrmex nitidus.* Differs from *brisbanensis* in shape as well as in size.

102b. **P. myrmecophila illidgei** nov.

♂. Above. Forewing dark brown: termen lined brown-black: cilia brown. Hindwing dark brown: termen narrowly brown-black with a narrow interrupted line, pale blue: a pair of obscure subtornal spots, brown-black: cilia brown.

Beneath. Forewing pale brown: markings typical, broad, dark brown, edged white. Hindwing pale brown: markings typical, dark brown edged whitish: termen with a series of obscure spots orange-brown, those towards tornus centred black.

♀. Above. Forewing brown: a very broad central area, reaching base and dorsum, blue: a spot at end of cell, dark brown: termen lined brown-black: cilia brown. Hindwing blue: costa and apex broadly brown: a spot at end of cell, dark brown: termen narrowly brown with a narrow line, blue: a pair of very obscure subtornal spots, brown-black: cilia brown.

Beneath as in male.

Loc. Brisbane 9 10 11. 1♂ 2♀.

This race is at once recognised from the southern race by its larger size and more pronounced markings beneath. It affords further evidence that *myrmecophila* is a species distinct from *brisbanensis.*

103. **Pseudodipsas digglesi** Hewitson. **Fig. 182, 191, 435.**

Transactions Entomological Society London 1874, p. 344.

♂. Above. Forewing silky blue strongly tinged purple: costa, apex broadly, and termen, brown-black: cilia brown with tips grey. Hindwing silky blue strongly tinged purple: costa, and termen narrowly brown-black: cilia grey.

Beneath. Forewing greyish white: a streak at end of cell, and a series of irregular narrow discal and subterminal streaks, pale brown: a subterminal spot in area 1a, pale brown. Hindwing greyish white: markings typical, narrow, pale brown obscurely edged whitish: a subterminal series of obscure spots, reddish brown crowned brown: an irregular tornal line, metallic green: cilia at vein 1a and vein 2, black.

♀. Above. Forewing pale silky blue: costa, apex and termen, broadly brown-black: cilia grey. Hindwing pale silky blue: costa broadly, termen, and postcellular veins, brown-black: cilia whitish.

Beneath as in male.

Loc. Kuranda 6. Townsville 3 4 8 11 12. Mackay 4. Brisbane. Byron Bay 3. 21♂ 24♀.

In general appearance this species differs considerably from all others of the genus.

Genus **MILETUS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 71, 1816.

Forewing with vein 11 straight and free from vein 12: termen only slightly shorter than dorsum. Hindwing more or less dentate, and more produced at tornus than at apex. Eyes smooth.

All the species are marked beneath with brown, orange or red spots, edged with metallic green. In *M. hecalius* vein 6 of the forewing rarely arises from vein 7.

Type. *Miletus polycletus* Linne, from Amboina.

This genus contains a large number of species, the colours of which upon the undersurface are unrivalled by any other group of *Lycaenidae*. Many species occur in Australia, but still more in New Guinea, and they are also found in the islands both east and west of New Guinea. Many of the species are rare in collections, but this is largely due to their habits. Notwithstanding their brilliant colours beneath, they are most inconspicuous upon the wing, and many of them are extremely local, and for years at a time seem to disappear almost entirely from their usual localities. We have series of a majority of the species, but there are still a few only poorly represented in our collections. We have also several odd examples that do not entirely conform with any described species: as it is more than likely that some at least of these are only aberrations, we have refrained from naming them. All the known pupae of the genus are of the usual Lycaenid type, ovoid in section. Some of the larvae and pupae (probably most of them) shelter within ants' nests.

The brightly coloured markings beneath of the butterflies of this genus all conform to a general pattern-scheme, though modified by size and shape and sometimes by coalescence. For convenience of description we have drawn **figure V.** and described it, and the later specific descriptions are written in comparison with this typical figure.

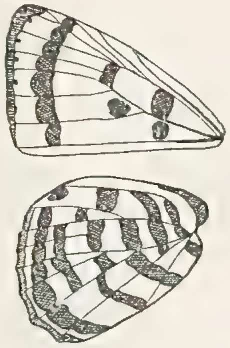


Fig. V. Diagram of *Miletus*, showing arrangement of spots (enlarged).

♂ ♀. Beneath. Forewing with a spot in middle of cell, and a spot below middle of cell in area 1a: a bar at end of cell and a spot below end of cell in base of area 2: a discal band from vein 10 to vein 1a. Hindwing crossed by seven bands of variable spots: first a basal streak on costa: second a subbasal band from vein 8 to dorsum: third a bar across cell at onethird, with a spot above and sometimes a spot below: fourth a bar across cell at twothirds with spots below it almost or quite reaching dorsum: fifth a bar at end of cell with often a spot below it in base of area 2: sixth a strongly curved discal band from vein 8 at costa to dorsum, with its costal and dorsal spots often moved nearer base: seventh a broad sometimes obscured terminal band. These spots and bars are

p. 71. 1856

Richmond R.G. GAW 1922

always more or less heavily margined with metallic scales, and the terminal band often has a central line of variable metallic spots. In some species of the genus, the forewing beneath has a coloured band from base along subcostal to end of cell: this band usually coalesces with the spot in cell and with the bar at end of cell, and is narrowly edged metallic. In many species the forewing beneath has a narrow subterminal band of irregular black spots, edged or sprinkled with metallic scales.

104. **Miletus delicia** Hewitson.

We have no doubt that Hewitson's type came from the neighbourhood of Brisbane. Southern examples differ considerably, so we have described them as a subspecies.

104a. **M. delicia delicia** Hewitson. **Fig. 231.**

Entomologists' Monthly Magazine 1875, xii, p. 38.

♂. Above. Forewing brown: a large basal area, not reaching costa, metallic silvery green: cilia pale brown. Hindwing brown: a large central area, reaching base, metallic silvery green: an irregular tornal spot, orange-red: cilia pale brown.

Beneath. Forewing grey-brown: a bar from base along subcostal, and coalescing with bar at end of cell, reddish yellow edged metallic green: spots typical, black, often edged metallic green: discal band reddish yellow edged metallic green: termen broadly reddish yellow with a central line, metallic green. Hindwing grey-brown: first six bands typical, red edged metallic green: termen broadly red, tornally edged black, with a central line, metallic green tornally edged black.

♀. Above as in male: basal area of forewing, and central area of hindwing, metallic blue.

Beneath. Forewing grey-brown: a large central area suffused orange: markings as in male. Hindwing as in male.

Loc. Duaringa. Brisbane. Newcastle. Sydney. Illawarra. 3♂ 2♀.

A remarkable aberration from near Rockhampton has the wings above almost entirely metallic green: this has been named var. *duaringae,* and from it we have drawn **figure 231.**

104b. **M. delicia delos** nov. **Fig. 228, 229, 230.**

♂. Above. Forewing dark brown: a basal area, not reaching costa, metallic green: cilia pale brown. Hindwing dark brown: a central area, reaching base, metallic green: an irregular tornal spot, orange-red: cilia pale brown.

Beneath. Forewing dark grey-brown: a bar from base along subcostal and coalescing with bar at end of cell, red edged metallic green: spots typical, black, often edged metallic green: discal band red edged metallic green: termen broadly red, with a central line, metallic green. Hindwing dark grey-brown: first six bands typical, red edged metallic green: termen broadly red, tornally edged black, with a central line, metallic green tornally edged black.

♀. Above as in male: basal area of forewing and central area of hindwing less clearly defined and often reduced in size, metallic blue.

Beneath. Forewing dark grey-brown: a large central area suffused yellowish: markings as in male. Hindwing as in male.

Loc. Wandin 11 12. Mordialloc 3 10 11 12. 27♂ 21♀.

105. **Miletus polycletus** Linne. (Amboina)

105a. **M. polycletus rex** Boisduval.

Voyage Astrolabe Lepidoptera, p. 72, 1832.

♀. Above. Forewing black: an irregular large central patch, white: basal and dorsal area green: cilia black. Hindwing grey-black: termen narrowly and obscurely black: cell dusted green: cilia black with tips whitish.

Beneath. Forewing pale brown: central white patch as above but larger: a streak on costa at base, and a streak along subcostal and coalescing with bar across cell, dark red edged black and metallic green: an irregular broad bar at end of cell, and an irregular discal band to vein 3, dark red edged black and metallic green: termen obscurely orange-red edged black, with a central line, terminating in a distinct spot in apex, metallic green. Hindwing pale brown: first six bands typical but somewhat modified, divided into spots, dark red edged black and metallic green: sixth band with portion from vein 3 to vein 6 reaching towards termen: termen dark red edged black, with a broad waved central line, metallic green: tornal portion of terminal band, below waved line, pale yellow.

Loc. Cape York (*Macleay Mus.*). 1♀.

The male of this race, which is common in New Guinea, is larger than the male of *rovena,* has rather narrower black margins above, and is darker beneath. It has not yet been found within Australian limits.

105b. M. polycletus rovena Druce. Fig. 232, 233, 234, 235.

Transactions Zoological Society London 1891, p. 184.

♂. Above. Forewing dark rich blue: termen lined black: cilia black. Hindwing dark rich blue: costa and tornus broadly, and termen narrowly, black: cilia black with tips whitish.

Beneath. Forewing dull brown: a streak on costa at base, and a streak along subcostal and coalescing with bar across cell, dark red edged black and metallic green: an irregular broad bar at end of cell, and an irregular discal band to vein 3, dark red edged black and metallic green: termen obscurely orange-red edged black, with a central line, terminating in a distinct spot in apex, metallic green. Hindwing dull brown: first six bands typical, somewhat modified, divided into spots, dark red edged black and metallic green: sixth band with portion from vein 3 to vein 6 reaching towards termen: termen dark red edged black, with a broad waved central line, metallic green: tornal portion of terminal band, below waved line, pale yellow.

♀. Above. Forewing black: an irregular large central patch, white: a basal and a dorsal area, rich blue: cilia black. Hindwing grey-black: termen narrowly and obscurely black: cell dusted blue: cilia black with tips whitish.

Beneath. Forewing pale brown: white patch as above but larger: markings as in male. Hindwing pale brown: markings as in male.

Loc. Cooktown 10. Kuranda 2 3 4 5 10 11 12. Mackay 4. 29♂ 22♀.

106. Miletus narcissus Fabricius. Fig. 222, 223, 224, 225.

Systema Entomologiae, p. 524, 1775.

♂. Above. Forewing black: a central area, reaching base and dorsum, bright blue: cilia brown with tips whitish. Hindwing bright blue: costa broadly, and termen, black: cilia white, at veins broadly black.

Beneath. Forewing grey-black: costa pale yellow: dorsum whitish: a broad streak along subcostal and coalescing with bar at end of cell, yellow edged metallic green: a fused discal band to vein 3, dull red edged dark brown and metallic green: termen from apex to vein 2, obscurely orange-red with a central line of dots, black dusted metallic green. Hindwing grey-black: costa broadly, and a patch on dorsum at half, dull white: spots of bands coalescing: basal streak and subbasal band typical, dull red edged metallic green: third and fourth bands broad, dull red edged brown-black and metallic green: fifth at end of cell, small, touching fourth and sixth, dull red broadly edged brown-black: discal band very irregular, sometimes interrupted beyond cell, dull red edged brown-black and metallic green: termen broadly dull orange-red edged brown black, with a broad central line, metallic green.

♀. Above. Forewing dull black: a large central area, reaching base and dorsum, pale blue: cilia brown with tips whitish. Hindwing pale blue: costa and termen, broadly dull black: cilia whitish, at veins broadly dull black.

Beneath. Forewing as in male, paler. Hindwing ivory white: markings as in male.

Loc. Cape York 1 2 10. Thursday Is. 1 2 3 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Cooktown 4 5 10 11. Cairns 1 2 3 4 6 7 11. 73♂ 52♀.

107. Miletus apollo Miskin. Fig. 880, 881.

Synonymical Catalogue Rhopalocera Australia, Supplement, 1891.

♂. Above. Forewing rich orange-red: apex very broadly, and termen, black: cilia orange-red. Hindwing rich orange-red: termen with a series of small spots at veins 1a, 2 and 3, black: cilia orange-red.

Beneath. Forewing orange: costa and apex broadly red-brown: bands and spots confined to the red-brown area, whitish and obscure, irregularly edged metallic silvery, and in cell irregularly edged black: a series of subterminal dots from vein 2, silvery. Hindwing with costal twofifths rich red-brown, with a series of four large subcostal spots, cream: terminal threefifths obscurely orange-brown, with bands broad and irregular, dull red edged cream and metallic silvery green, and towards dorsum edged black: termen reddish orange, with a central line, metallic silvery green, and with a spot on each vein, black.

♀. Above. Forewing reddish-orange: apex very broadly, termen broadly and extending for a short distance along dorsum, black: cilia reddish orange. Hindwing reddish orange: a broad subcostal area, black: subterminal spots at veins 2, 3 and 4, black: termen with spots at veins 1a, 2 and 3, black: cilia reddish orange.

Beneath as in male, paler: bands of hindwing much narrower.

Loc. Cape York 1 3 5 6 8 9 10 11 12. Prince of Wales Is. 6. Kuranda. Ingham (type). 24♂ 11♀.

MERINGA ♀ 10.C

[illegible] and metallic green [illegible]

[illegible] green. [illegible]

[illegible] heads broad, dull [illegible]

[illegible] Fig. 330, 331.

[illegible] small spots at [illegible]

108. **Miletus apelles** Fabricius. **Fig. 203, 204, 205.**

Systema Entomologiae, p. 524, 1775.

♂. Above. Forewing coppery orange: apex broadly, and termen, black: cilia grey. Hindwing coppery orange: costa broadly black: termen lined black: veins 2, 3 and 4, narrowly black: cilia grey.

Beneath. Forewing yellow-brown, towards dorsum paler: a costal streak at base, metallic green: a subcostal streak, coalescing with bar at end of cell, outlined metallic green: discal band only indicated by subcostal edgings, metallic green: termen with a series of small spots, black dusted metallic green. Hindwing grey-brown: markings typical, broad, irregular, bright red edged metallic green: termen reddish orange inwardly edged black and with a central line, metallic green.

♀. Above. Forewing pale coppery orange: costa, apex and termen, broadly brown-black: dorsum obscurely brown: cilia grey. Hindwing pale coppery orange: costa broadly brown-black: termen lined black: veins 2, 3 and 4, broadly black: cilia grey.

Beneath as in male.

Loc. Cape York 2 3 4 5 9 10 11. Thursday Is. 4. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Cooktown 10 11. Cairns 1 2 3 4 10 12. Kuranda 1 2 3. Chillagoe 3. Townsville 1 2 4 5 9. Mackay 3 4. 68♂ 54♀.

Examples from Mackay are much darker beneath than those from Cape York and the islands.

109. **Miletus hecalius** Miskin. **Fig. 217, 218, 226, 227.**

Transactions Entomological Society London 1884, p. 94.

♂. Above. Forewing rich purple: costa narrowly, apex and termen broadly, black: cilia dull black with tips greyish. Hindwing rich purple: costa with termen broadly black: a tornal streak, reaching along veins 2 and 3, dull red: cilia grey.

Beneath. Forewing yellow: dorsum grey: a bar across middle of cell, a bar at end of cell, and a discal band, orange-red edged black and metallic green: termen obscurely orange-red, with a central series of dots, black dusted metallic green. Hindwing dark grey-brown: bands typical, red narrowly edged metallic green: termen broadly red, with an interrupted central line, metallic green.

♀. Above. Forewing brown-black: a central patch, reaching base by a narrow streak along median vein, orange: cilia brown with tips grey. Hindwing brown-black: a variable spot at end of cell, orange: veins 2, 3, 4 and 5, orange-red: a narrow terminal band, orange-red: cilia grey.

Beneath. Forewing rich yellow: dorsum grey: markings as in male but paler. Hindwing rich yellow: bands only indicated by small reddish spots faintly edged metallic green.

Loc. Sydney 1 2 4 9 10 12. Wandin 1. Narracan 1. Toora. Gisborne 1. 62♂ 50♀.

Considerable variation occurs in the extent of the central orange patch of forewing of female above, and in the width of the red bands on the hindwing of female beneath.

110. **Miletus halyaetus** Hewitson. **Fig. 264, 855.**

Transactions Entomological Society London 1874, p. 350.

♂. Above. Forewing brown: costa at base yellowish brown: a large central area, reaching base and dorsum, bright metallic green: cilia greyish. Hindwing bright metallic green: costa broadly brown: termen narrowly orange edged brown-black: cilia greyish.

Beneath. Forewing orange-yellow: a large irregular spot in middle, and another near end of cell, bright metallic green narrowly edged black: a discal spot from vein 4 to vein 6, with a spot above in base of area 6, bright metallic green narrowly edged black: a band of six large subterminal spots, each reaching in a point towards termen, black, upper three centred bright metallic green. Hindwing orange-yellow: a basal, central, discal and subterminal series of large irregular spots, metallic green faintly and irregularly edged black.

♀. Above. Forewing brown: costa yellowish brown: a central area, reaching base and dorsum, metallic bluish purple: a terminal band, orange: cilia whitish, at veins broadly brown. Hindwing metallic bluish purple: costa broadly brown: a terminal band, orange: cilia whitish, at veins broadly brown.

Beneath as in male.

Loc. Geraldton 8 10 11. 12♂ 11♀. Perth (Mt Lawley) 5-11.23 ([illegible])

The metallic markings beneath do not agree with the general pattern scheme of the genus, but we can find no structural points to justify the separation of the species.

111. **Miletus elgneri** Waterhouse & Lyell. **Fig. 841, 847.**

Victorian Naturalist 1909, Vol. XXVI, p. 114.

♂. Above. Forewing dark purple: apex and termen brown-black: cilia brown-black. Hindwing dark purple: costa and termen brown-black: cilia greyish, at veins brown-black.

Beneath. Forewing dull grey-brown: a broad streak from base along subcostal, coalescing with an obscure bar at middle and a bar at end of cell, dull reddish brown edged metallic green: a broad discal band to vein 3, dull red-brown edged darker and broadly edged metallic green: termen obscurely and narrowly dull red-brown edged darker, with a series of central dots, brown-black dusted metallic green. Hindwing dull grey-brown: bands typical but irregular, divided into irregular spots, dull reddish brown margined darker brown, and sometimes faintly edged metallic green: costa with a narrow line, metallic green: termen pale brown edged obscurely darker, with a central broad line, brown-black edged metallic green, and a spot at each vein, brown-black.

♀. Above. Forewing rich brown: a central area, reaching base and dorsum at base, dull orange: cilia greyish. Hindwing brown faintly suffused dull orange: termen lined brown-black: cilia greyish, at veins brown-black.

Beneath. Forewing grey: a large central patch yellowish: markings as in male. Hindwing grey: markings as in male.

Loc. Prince of Wales Is. 5 6 7. 27♂ 15♀.

112. **Miletus miskini** Waterhouse. **Fig. 210, 211, 212.**

Proceedings Linnean Society N. S. Wales 1903, p. 164, pl. 3, f. 30, 31.

♂. Above. Forewing purple: termen narrowing to tornus, black: cilia black at tornus greyish. Hindwing purple: costa broadly dull black: termen lined black: cilia greyish, at veins black.

Beneath. Forewing pale grey-brown: dorsum paler: costa dull orange, with a basal streak metallic green: a broad streak along subcostal coalescing with a bar at end of cell, dull orange edged metallic green: rest of cell, except lower edge, dull orange: discal band narrow, dull orange basally edged metallic green: termen dull orange with a series of small central spots, black dusted metallic green. Hindwing pale grey-brown: bands typical, orange-red irregularly edged black and metallic green: termen broadly orange-red edged black, and with a broad central line, metallic green edged black.

♀. Above. Forewing black: a large central area, reaching base and dorsum, pale blue: cilia grey. Hindwing grey-black: a central and basal area suffused pale blue: termen narrowly dull black: cilia grey.

Beneath. Forewing grey-white: markings as in male. Hindwing grey-white: markings as in male: bar at end of cell broadly edged black.

Loc. Kuranda 1 2 3 4 5 8 9 10 12. Herberton. Innisfail. Southport 2. 25♂ 36♀.

It is possible this may prove to be a subspecies of *M. protogenes* Felder.

113. **Miletus euclides** Miskin. **Fig. 219, 220, 221.**

Proceedings Linnean Society N. S. Wales 1888, p. 1517.

♂. Above. Forewing dark purple: termen narrowly black: cilia black. Hindwing dark purple: costa and termen narrowly black: cilia black with tips grey.

Beneath. Forewing grey-brown: costa dull orange with a broad discal streak, metallic green: a broad streak along subcostal coalescing with a spot at onethird and a spot in middle of cell, dull orange edged black and broadly edged metallic green: a bar at end of cell, and a broad discal band, dull orange edged black and broadly edged metallic green: termen obscure, dull orange, with a line of central dots, black dusted metallic green. Hindwing grey-brown: bands typical, divided into well defined irregular spots, orange-red edged black and broadly edged metallic green: termen obscurely orange-red, basally edged black, and with an interrupted central line, black dusted metallic green.

♀. Above. Forewing black: a central area, reaching base and dorsum, blue tinged purple: cilia black. Hindwing black: a variable central area, reaching base, bluish purple: cilia grey, at veins black.

Beneath as in male: metallic green edges broader.

Loc. Kuranda 1 4 5 9 12. Cairns 12. Cardwell. Port Douglas (type). 3♂ 8♀.

The metallic green scales, which edge the markings beneath, have in this species reached their maximum development. *M. meleagris* Waterhouse is a synonym.

[illegible] Fig. 8[illegible]

[illegible] brown black.

[illegible] spot at [illegible] edged metallic [illegible]

[illegible] irregular, [illegible] into [illegible] faintly edged metallic [illegible]

[illegible] spot at each vein.

[illegible] running base [illegible]

[illegible] Fig. 35 [illegible]

[illegible] narrowing to tornus, black: cilia [illegible]

[illegible] dorsum [illegible] costa dull orange, with [illegible] with a bar at end of [illegible]

[illegible] irregularly [illegible]

[illegible] Society [illegible] 1886, p. [illegible]

[illegible] base and dorsum [illegible]

[illegible] as the [illegible]

Toowoomba (188)/11 3 [illegible] Tweedsheads NSW. 2.1.23 Toronto 4'7

114. **Miletus ignita** Leach.

More races than those listed below probably occur in this species; but they can only be determined by the breeding of long series from many different localities. This should not be difficult of accomplishment now that the life history of the southern race is known. The larvae and pupae of *M. ignita ignita* have been found at Ocean Grove attended by the ant *Iridomyrmex nitidus*, and feeding by night upon the leaves of *Acacia pycnantha*.

114a. **M. ignita ignita** Leach. **Fig. 213, 214, 215.**

Zoological Miscellany, i, p. 136, pl. 60, fig. 1, 2, 3, 1814.

♂. ABOVE. Forewing dull coppery purple: costa brown suffused coppery: apex broadly, and termen, brown: cilia grey. Hindwing dull coppery purple: costa broadly and termen, brown: veins 2, 3 and 4, sometimes coppery: cilia grey, at veins black.

BENEATH. Forewing dark grey-brown: cell and costa to beyond end of cell, orange: a streak along subcostal coalescing with bar at end of cell, outlined metallic green: traces of two spots in cell, a spot below middle of cell, and a large spot in base of area 2, brown-black: discal band typical, orange-red or red, basally edged black and metallic green: termen narrowly orange-red, basally edged with a row of spots, black dusted metallic green. Hindwing dark grey-brown: bands typical, red, irregularly edged metallic green: termen broadly red with a central line, metallic green.

♀. ABOVE. Forewing brown: costa and apex often coppery: a large central area, reaching base and dorsum, purple, sometimes tinged blue: cilia greyish. Hindwing purple: costa broadly brown: termen narrowly brown-black: veins 2, 3 and 4, usually coppery: cilia greyish white, at veins brown-black.

BENEATH as in male.

LOC. Port Macquarie 10. Sydney 1 2 3 10 11. Illawarra 2 11. Pambula 12. Redesdale. Ocean Grove 11 12. Dimboola 11. Port Victor 1. 80♂ 79♀.

We have long series from Sydney, Pambula and Ocean Grove only, and these though all variable do not appear to have developed geographical distinctions. Neither can we detect differences in examples from Dimboola and South Australia, but our material from these localities is too scanty and in too poor condition to warrant our forming definite conclusions. A long series of bred specimens from Ocean Grove shows very considerable variation in the amount of the coppery scaling upon both wings above. The females exhibit a marked variation in the colour of the forewing above: this is usually tinged blue, and at some angles of light the colour of the forewing appears quite distinct from that of the hindwing: but we have other females bred from the same batch of pupae, in which the forewing has no bluish tint, the purple colour of forewing and hindwing being apparently identical.

114b. **M. ignita olliffi** Miskin. **Fig. 842, 843.**

Proceedings Linnean Society N. S. Wales 1888, p. 1518.

♂. ABOVE. Forewing dull purple: costa, apex broadly, and termen, brown: cilia grey-brown. Hindwing dull purple: costa and termen, broadly brown: veins 2, 3 and 4, very rarely faintly coppery: cilia grey-brown, at veins black.

BENEATH. Forewing grey-brown: cell and costa to beyond end of cell, orange-yellow: a streak along subcostal coalescing with bar at end of cell, outlined metallic green: traces of two spots in cell, a spot below middle of cell, and a large spot in base of area 2, brown-black: discal band typical, narrow, orange-red, basally lined black and metallic green: termen narrowly orange-red, basally edged with a row of spots, black dusted metallic green. Hindwing grey-brown: bands typical, orange-red, irregularly and faintly edged metallic green: termen broadly red sometimes basally edged black, with a central line, metallic green.

♀. ABOVE. Forewing brown: costa and apex often coppery: a large central area, reaching base and dorsum, purple, sometimes tinged blue: cilia grey-brown. Hindwing purple: costa broadly brown: termen brown-black: veins 2, 3 and 4, usually coppery: cilia greyish, at veins brown-black.

BENEATH as in male.

LOC. Albany. Wilson's Inlet 11 12. 15♂ 12♀.

The localities given for this form by Miskin were Newcastle and Fremantle, but we can find no specimens in the Australian Museum collection labelled Newcastle. Specimens from that locality would be typical *ignita*, so we propose to restrict the name *olliffi* to the form from the south of West Australia, of which we now have a good series. It can be easily separated from *ignita* by the much narrower and paler bands beneath, and the less extensive metallic green markings.

114c. **M. ignita chrysonotus** Grose-Smith. **Fig. 206, 207.**

Rhopalocera Exotica, Vol. III, 1899, Oriental Lycaenidae, pl. 19, fig. 3, 4.

♂. Above. Forewing bright purple: costa, apex and termen, brown: cilia grey. Hindwing bright purple: costa broadly and termen narrowly, brown: veins 2, 3 and 4, faintly coppery: cilia grey, at veins brown-black.

Beneath. Forewing pale grey-brown: markings as in *ignita ignita*, but narrower and brighter: dark spots in cell and beneath cell, and in termen, more prominent. Hindwing pale grey-brown: markings typical, bright red edged metallic green: termen broadly red, towards dorsum broadly edged black, with a central line, metallic green.

♀. Above. Forewing brown: a large central area, reaching base and dorsum, bluish purple: cilia whitish. Hindwing bluish purple: costa broadly and termen, brown: veins 2, 3 and 4 usually brown, at termen coppery: cilia whitish, at veins brown.

Beneath as in male.

Loc. Cape York 5 8. Kuranda 1. Mackay 3. Brisbane. Stradbroke Is. 12. 1♂ 6♀.

We accept this as a northern race of *ignita,* though it is not very distinctly differentiated. In our few examples the wings beneath are much paler and the bands beneath much brighter than in *ignita ignita.* The coppery scaling of the veins of hindwing above, so usual in *ignita ignita,* is only faintly indicated in the male, and is absent, except just at the vein terminations, in the females: the costa of forewing above is not suffused coppery, and the blue area of the female forewing above is very variable in extent.

114d. **M. ignita erythrina** Waterhouse & Lyell. **Fig. 848, 849.**

Victorian Naturalist 1909, Vol. XXVI, p. 115.

♂. Above. Forewing brownish purple: termen lined brown: cilia greyish white. Hindwing brownish purple: subtermen and veins 1a to 4, faintly coppery: termen lined dark brown: cilia whitish, at veins dull brown.

Beneath. Forewing very pale grey-brown: markings as in *ignita ignita* but much narrower, and dull red: dark spots in cell, beneath cell, and in termen, more prominent. Hindwing very pale grey-brown: markings typical, narrow, dull red edged metallic green: termen broadly dull red, towards dorsum broadly edged black, and with a narrow central line, metallic green.

♀. Above. Forewing brown: a large central area, reaching base and dorsum, bluish purple: cilia white. Hindwing purple: costa broadly and termen narrowly, brown: veins 2, 3 and 4, narrowly brown, at termen coppery: cilia white, at veins faintly brown.

Beneath as in male.

Loc. Darwin 2 3 4 5. 5♂ 6♀.

This is a well differentiated race of *ignita,* with the colours above much duller, and beneath much paler, and with the red bands beneath much narrower.

115. **Miletus cyane** nov. **Fig. 216, 259, 260.**

♂. Above. Forewing dull purple: apex and termen narrowly brown: cilia greyish. Hindwing dull purple: costa broadly dull brown: termen narrowly brown: veins 2, 3 and 4, coppery: cilia greyish.

Beneath. Forewing grey-brown: cell and costa to beyond end of cell, faintly yellow: a streak along subcostal, coalescing with bar at end of cell, outlined metallic green: a spot below middle of cell, and a spot in area 2, brown-black: discal band narrow, dull red, basally edged metallic green: a series of small subterminal spots, dull red, outwardly edged metallic green. Hindwing grey-brown: markings typical, narrow, dark red edged metallic green: a series of small subterminal spots, dark red outwardly edged metallic green, towards tornus narrowly edged black.

♀. Above. Forewing brown: a large central area, reaching base and dorsum, bluish purple: cilia greyish white. Hindwing bluish purple: costa broadly and termen narrowly, brown: cilia greyish white.

Beneath. Forewing as in male: markings dull orange-red: discal and subterminal bands basally edged black. Hindwing as in male: markings dull orange-red: subterminal band towards tornus basally edged broadly black.

Loc. Mackay 9. Sandgate. 2♂ 1♀. MILMERRAN Q. 10

It is with some slight hesitation that we have placed these sexes together. Both males have the hindwing more produced at tornus than in *M. ignita,* and they are quite distinct from that species above.

[illegible] cream, or [illegible] the [illegible]. H[illegible]

[illegible] 2, 3 and 4 [illegible]

[illegible]

[illegible] Brisbane [illegible] 12. [illegible]

[illegible] just of the [illegible] terminations [illegible]

[illegible]

[illegible] in cement, [illegible]. Hindwings very [illegible]

[illegible] reaching costa and dorsum, black [illegible]

[illegible] of veins thereby [illegible]

[illegible] narrower.

[illegible] Fig. [illegible]

[illegible] common material, [illegible]

[illegible] dull [illegible]

[illegible]

The male from the southern locality has the red spots beneath almost as in *M. ignita*, but narrower, while that from Mackay has the spots still narrower and nearly as pale as in *M. epicurus*. The female is intermediate between *M. ignita* and *M. epicurus*. It is just possible that all three specimens are only aberrations of *epicurus*, but placed together they appear to have a distinct facies peculiarly their own.

116. **Miletus epicurus** Miskin. **Fig. 256, 257, ⑵58.**

Transactions Entomological Society London 1876, p. 455.

♂. Above. Forewing purple-brown: termen brown: cilia greyish. Hindwing purple-brown: veins 2, 3 and 4, faintly dull coppery: costa broadly and termen narrowly, brown: cilia greyish.

Beneath. Forewing dull grey-brown: a subcostal streak, coalescing with spot at middle and bar at end of cell, outlined metallic green: a spot in middle of cell, one below middle of cell, and one in base of area 2, obscurely black: a discal band faintly and narrowly yellow-brown, basally edged metallic green: termen obscurely yellow-brown edged brown, and with a central line of spots, metallic green. Hindwing dull grey-brown: bands typical, faint, yellow-brown edged metallic green: termen red edged brown and towards tornus black, with a broad central line, metallic green basally edged red and outwardly edged yellow-brown.

♀. Above. Forewing brown faintly suffused coppery: base faintly tinged metallic blue: cilia greyish. Hindwing brown: central area faintly tinged metallic blue: veins 2, 3 and 4, broadly dull coppery: cilia greyish.

Beneath as in male.

Loc. Brisbane 9 10 11. Stradbroke Is. 10. 9♂ 2♀.

This is a very dingy species in comparison with *M. ignita*. The markings beneath are scarcely as wide as the metallic edgings.

Genus **WAIGEUM** Staudinger.

Iris 1895, p. 154.

Forewing with vein 11 straight and free from vein 12: termen much shorter than dorsum. Hindwing with termen evenly rounded. Eyes smooth.

Type. *Waigeum miraculum* Druce, from Waigiou.

This genus contains several remarkably handsome species, with a superficial resemblance above to *Thysonotis*, but recalling both *Thysonotis* and *Miletus* beneath. The metallic green areas of the hindwing beneath are of greater extent than in any other Australian species.

117. **Waigeum theon** Felder. (Gilolo).

This species extends to New Guinea and the Aru Islands: it is not quite typical of the genus.

117a. **W. theon panaetha** Waterhouse & Lyell. **Fig. 165, 202.**

Victorian Naturalist 1909. Vol. XXVI, p. 112.

♂. Above. Forewing bright rich blue: costa narrowly, apex broadly, and termen narrowly, black: a variable, ill-defined central streak, white: cilia black, with tips faintly whitish. Hindwing bright rich blue: costa whitish: apex broadly and termen, black: cilia whitish, at veins broadly black.

Beneath. Forewing silky white: costa to beyond cell, broadly black and narrowly edged metallic green: apex and termen dull black, with a central line, metallic green: a broad subapical band, intense black, edged, except costally, metallic green. Hindwing metallic green: a subbasal band, intense black edged bright metallic green: a broad band from costa near apex to middle of cell, shining blue: a band from apex to dorsum at base, intense black edged (except apical portion) bright metallic green: an irregular postcellular band from vein 4 to vein 1b, intense black edged bright metallic green: termen intensely black, with a broad central line, bright metallic green.

♀. Above. Forewing black: a central area, reaching base and dorsum, silky white faintly edged metallic blue: cilia black with tips faintly whitish. Hindwing black: costa broadly whitish dusted metallic blue: cilia whitish, at veins broadly black.

Beneath as in male: central green line of termen, broader.

Loc. Cape York 3 6 9 11 12. 15♂ 6♀.

Genus **THYSONOTIS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 20, 1816.

Forewing with vein 11 anastomosed with vein 12 for a short distance, but with basal and terminal portions free: termen much shorter than dorsum. Hindwing with termen rounded: in one species with a filamentous tail to vein 2: hindwing beneath with a basal area and a broad subterminal area of metallic scales. Eyes hairy.

Type. *Thysonotis danis* Cramer, from the Moluccas.

Structurally this genus is somewhat difficult to separate from *Nacaduba,* but in general appearance the species of the two genera show little resemblance. The bright blue colour above of the males, and the metallic green bands beneath of both sexes of *Thysonotis,* separate them distinctly from the smaller and more sombrely coloured *Nacaduba.*

118. **Thysonotis danis** Cramer. (Moluccas).

118a. **T. danis syrius** Miskin. **Fig. 151, 152, 153.**

Proceedings Linnean Society N. S. Wales 1890, p. 34.

♂. Above. Forewing blue: costa narrowly and termen broadly, black: a small central area, rarely reaching dorsum, white: cilia black with tips whitish. Hindwing white: base blue: terminal half of wing black dusted blue: cilia white, at veins black.

Beneath. Forewing black: a broad central area, reaching dorsum, white: a broad subcostal and subapical band, continued narrowly to vein 2, metallic green. Hindwing white: base broadly black, edged with a broad costal streak, metallic green: termen very broadly black, with a band of elongate rings, metallic green.

♀. Above. Forewing black: a central area, reaching dorsum, white: cilia white, at veins black. Hindwing white: base black: termen very broadly black: cilia white, at veins black.

Beneath as in male.

Loc. Cape York 1 2 3 4 5 7 8 9 10 11 12. Claudie R. 11. 38♂ 32♀.

This subspecies is distinguished from the southern *T. danis serapis,* by the absence of metallic scales above: it has passed in Australian collections as *apollonius,* with which subspecies it is closely allied. Miskin's types are unfortunately worn and discoloured, hence his description does not agree with fresh specimens.

118b. **T. danis serapis** Miskin. **Fig. 150.**

Synonymical Catalogue Rhopalocera Australia, p. 49, 1891.

♂. Above. Forewing pale blue: base dusted metallic green: costa narrowly and termen broadly, black: a central area, reaching dorsum, white: cilia black with tips whitish. Hindwing white: base pale blue: termen very broadly black dusted pale blue: cilia white, at veins black.

Beneath. Forewing black: a broad central area, reaching dorsum, white: a broad subcostal and subapical band, continued broadly to vein 2, metallic green. Hindwing white: base broadly black, edged with a broad costal streak, metallic green, and outwardly dusted metallic green: termen very broadly black, with a band of elongate rings, metallic green.

♀. Above. Forewing black: base broadly metallic green: a large central area, reaching dorsum, white: cilia white, at veins black. Hindwing white: base metallic green: termen very broadly black, inwardly dusted broadly metallic green: cilia white, at veins black.

Beneath as in male.

Loc. Cairns 6 7 10 11 12. Kuranda 1 2 3 4 5 6 7 11 12. Atherton 1 11. Ingham 5. 41♂ 41♀.

119. **Thysonotis hymetus** Felder. (Amboina).

This is probably the earliest name for this group of Lycaenids, though *caelius* (the Aru Is. race) and *taygetus* (one of the Australian races) were both named by Felder, as species, about the same time.

119a. **T. hymetus taygetus** Felder. **Fig. 158, 160, 161, 269.**

Reise Novara Lepidoptera ii, p. 266, pl. 33, fig. 19, 20, 21, 1865.

♂. Above. Forewing deep blue: costa narrowly and termen, lined black: rarely traces of an obscure central area, whitish: cilia black. Hindwing deep blue: termen black: a broad central area from dorsum to costa just before apex, white: cilia black.

[illegible]

[illegible] p. 20. [illegible]

[illegible]

[illegible]

[illegible] and brown hyoidly, [illegible] small central [illegible]

[illegible] greenish [illegible] broadly black, with [illegible]

[illegible]

[illegible] Australia p. 42. 1891.

[illegible] with fine white [illegible]

[illegible]

[illegible]

[illegible] p. 25. [illegible] 1887

[illegible]

Narrabeen Dec ^{9} 1921 (GAW)

Port Macquarie 3 4/1910 Toronto 4/17

Beneath. Forewing black: a broad subcostal streak to beyond end of cell, metallic green: a broad central area, reaching dorsum and continued from its apex as a subterminal band to vein 9, white. Hindwing white: base black, at costa white edged metallic green: termen broadly black, with a band of rings, metallic green, and an interrupted faint terminal line, white.

♀. Above. Forewing black: base broadly metallic green: a broad central area, reaching dorsum, white: cilia black. Hindwing white: base metallic green: termen broadly black, with inner edge towards dorsum dusted metallic green: cilia black.

Beneath as in male.

Loc. Mackay 1 2 3 4 5 8 9. Brisbane 1 2 3 4 5 6 7 11. Byron Bay 3. Richmond R. 1 2 3 4 5. 8.9.10. Manning R. 3. 69♂ 49♀.

119b. **T. hymetus taletum** nov. **Fig. 159.**

♂. Above. Forewing deep blue: costa narrowly and termen, lined black: cilia black. Hindwing deep blue: termen black: cilia black.

Beneath. Forewing black: a broad subcostal streak to beyond end of cell, metallic green: a broad central area, reaching dorsum, and continued from its apex as a subterminal band to vein 9, white. Hindwing white: base black, at costa white edged metallic green: termen broadly black, with a band of rings, metallic green, and a faint interrupted terminal line, white.

♀. Above. Forewing black: base dusted metallic blue: a central area, reaching dorsum, white: cilia black. Hindwing white: base metallic blue: termen broadly black: cilia black.

Beneath as in male.

Loc. Cairns 6 7 10. Kuranda 1 2 3 4 6 7 10 11 12. Ingham 9. 23♂ 17♀.

It is only very rarely that male examples have traces of a white central area on hindwing above.

119c. **T. hymetus salamandri** Macleay.

Proceedings Entomological Society N. S. Wales 1866, p. liv.

♂. Above. Forewing deep blue: costa narrowly, and termen, lined black: cilia white, at veins black. Hindwing deep blue: termen black: a variable central area, usually obscure, rarely reaching dorsum, white: cilia white, at veins black.

Beneath. Forewing black: a broad subcostal streak to beyond end of cell, metallic green: a broad central area, reaching dorsum and sometimes continued from its apex as a narrow subterminal band to vein 9, white. Hindwing white: base black, at costa edged metallic green: termen broadly black with a band of rings, metallic green, and a faint interrupted terminal line, white.

♀. Above. Forewing black: base dusted metallic blue: a central area, reaching dorsum, white: cilia white, at veins black. Hindwing white: base metallic blue: termen broadly black: cilia white, at veins black.

Beneath as in male.

Loc. Cape York 1 2 3 4 5 6 10 11. Thursday Is. 1 3 4 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Claudie R. 1. 54♂ 41♀.

Male examples from Banks Island often have the termen of both wings above more broadly black, and rarely have the white central area of hindwing absent: the black termen of the hindwing beneath is much narrower, and the white area of forewing beneath is only rarely continued to vein 9.

120. **Thysonotis cyanea** Cramer. (Amboina).

The butterflies of this group are the only ones of the genus with tails.

120a. **T. cyanea arinia** Oberthur. **Fig. 154, 155, 156.**

Annals Museum Geneva xii, p. 465, 1878.

♂. Above. Forewing dull blue: costa narrowly and termen, lined black: an obscure central streak, whitish: cilia black. Hindwing dull blue: costa whitish: termen black: tail to vein 2, black with tip white: cilia black.

Beneath. Forewing white: costa and apex broadly, and termen narrowly, black: an irregular subtornal area, black: an interrupted terminal line, white. Hindwing white: base black, at costa white dusted metallic green: termen very broadly black, with a band of elongate rings, metallic green, and an interrupted terminal line, white.

♀. ABOVE. Forewing dull black: base pale metallic blue: a variable central area, reaching dorsum, white: cilia dull black. Hindwing dull black: base pale metallic blue: a variable central band from dorsum at half to before apex, white: a subterminal waved line, metallic blue.

BENEATH as in male.

LOC. Thursday Is. 3. Banks Is. 2. Darnley Is. 4 5 6 12. Cooktown 11 12. Cairns 6 7 10 11 12. Kuranda 1 4 5 10 11 12. Innisfail 9 11. Ingham 10. 78♂ 93♀.

Genus **NACADUBA** Moore.

Lepidoptera of Ceylon, p. 88, 1881.

Forewing with vein 11 anastomosed with vein 12 for a short distance, but with basal and terminal portions free: termen only slightly shorter than dorsum: costa usually only feebly arched and termen almost straight. Hindwing sometimes with a filamentous tail to vein 2, and then slightly produced at tornus: sometimes without a tail and then evenly rounded. Eyes hairy.

TYPE. *Nacaduba atrata* Horsfield, from Java. (= *prominens* Moore).

121. **Nacaduba pactolus** Felder. (Amboina).

121a. **N. pactolus cela** nov. **Fig. 850, 851.**

♂. ABOVE. Forewing dull purple: termen narrowly lined black: cilia brown. Hindwing dull purple: costa dull brown: termen narrowly lined black: cilia brown.

BENEATH. Forewing grey: markings typical, grey, broadly edged white: bar across cell absent: subterminal lines nearly straight and outer one very narrow. Hindwing grey: markings typical, grey broadly edged white: subcaudal and subtornal spots unequal, black crowned pale yellow-brown.

♀. ABOVE. Forewing dull black: a central area, reaching base and dorsum, pale metallic blue: cilia brown. Hindwing dull black: costa brown: termen lined black: a central area, reaching base, dusted pale metallic blue: a series of obscure subterminal rings, whitish centred black: cilia grey-brown.

BENEATH as in male.

LOC. Darnley Is. 5. 1♂ 1♀.

Characterised by the very broad white edges of the bands beneath: the largest species of the genus within Australian limits.

122. **Nacaduba lineata** Murray.

A race of this species also occurs on the Aru Islands.

122a. **N. lineata lineata** Murray. **Fig. 299, 300, 301, 302.**

Transactions Entomological Society London 1874, p. 524, pl. 10, fig. 9.

♂. ABOVE. Forewing bluish grey: termen obscurely lined brown: central and basal areas with long hairs, whitish: cilia grey. Hindwing bluish grey: costa obscurely and termen narrowly, brown: central and basal areas with long hairs, whitish: subcaudal and subtornal spots obscure, black, faintly edged whitish: cilia grey.

BENEATH. Forewing brown: markings typical, broad, dark brown faintly and narrowly edged whitish. Hindwing brown: markings typical, dark brown narrowly edged whitish: subcaudal and subtornal spots unequal, black, almost ringed orange.

♀. ABOVE. Forewing dull black: a large basal area, reaching dorsum and subcostal, metallic pale blue: a broad central area from vein 1a to vein 7, white: cilia grey-black. Hindwing grey-black: costa grey: a broad basal area dusted metallic pale blue: termen narrowly black: subcaudal and subtornal spots, black: cilia grey-black.

BENEATH. Forewing as in male: a central area from bar at end of cell to discal band, and reaching costa and dorsum, white. Hindwing as in male.

LOC. Claudie R. 1. Kuranda 1 2 3 4 5 6 8 10. Atherton 2 3. Herberton 12. Mackay 3. Brisbane 2 4 5 6 12. Stradbroke Is. 12. Richmond R. 1 3 4 5 8 9 10 11 Manning R. 3. Sydney 2 3. Illawarra 3 4. 31♂ 42♀.

Toronto 4/.7 Port Macquarie 3.4/1918.

[illegible] with [illegible] but with head and [illegible]

[illegible] to vein 2, and [illegible]

[illegible] sp. nov. Fig. [illegible], 591.

[illegible] black; [illegible]

[illegible] lined black; a central [illegible] rings, whitish [illegible]

Toronto NSW. 2.4.1920. Richmond R.2.8.

123. **Nacaduba caracalla** nov. **Fig. 854.**

♂. ABOVE. Forewing dull dark purple: termen narrowly lined black: cilia grey-black. Hindwing dull dark purple: termen narrowly lined black: cilia grey-black.

BENEATH. Forewing grey-brown: markings typical, grey-brown narrowly edged whitish. Hindwing grey-brown: markings typical, grey-brown narrowly edged whitish: subcaudal and subtornal spots unequal, black, almost ringed orange.

♀. ABOVE. Forewing dull black: area 1a faintly dusted dull blue: a small central patch from middle of area 1a to vein 5, white: cilia grey-black. Hindwing dull black: central area faintly dusted dull blue: a series of faint subterminal rings, whitish: cilia grey-black.

BENEATH. Forewing grey-brown: markings as in male: a central area from bar at end of cell to discal band, and reaching from vein 1a to vein 6, white. Hindwing as in male.

LOC. Darnley Is. 12. 1♂ 5♀.

Allied to *N. lineata* but much darker, with the central patch of forewing in female much smaller, and the tail to vein 2 much more slender. The male is without the long whitish hairs of *lineata,* so we do not consider it a race of that species.

124. **Nacaduba palmyra** Felder. (Amboina).

We have races of this species from Ceram and from the Aru Islands.

124a. **N. palmyra tasmanica** Miskin. **Fig. 308, 309, 310, 311.**

Proceedings Linnean Society N. S. Wales 1890, p. 40.

♂. ABOVE. Forewing pale bluish purple: termen lined brown: cilia white, at veins brown. Hindwing pale bluish purple: costa brown: termen lined dark brown: subcaudal and subtornal spots obscure, black: cilia white.

BENEATH. Forewing pale brown: termen suffused whitish: markings typical, broad, dark rich brown edged whitish. Hindwing pale brown: termen suffused whitish: markings typical, broad, dark rich brown edged whitish: subcaudal and subtornal spots, unequal, small, black heavily dusted metallic and faintly crowned dull orange.

♀. ABOVE. Forewing black: a large basal area, reaching dorsum and subcostal, metallic pale blue: a broad central area from vein 1a to vein 10, white: cilia whitish, at veins broadly black. Hindwing dull black: a broad central area, reaching base, metallic pale blue: a series of faint subterminal rings, whitish: cilia whitish, at veins broadly black.

BENEATH. Forewing as in male: a central area from bar at end of cell to discal band, and reaching from vein 1a to vein 10, white. Hindwing as in male: whitish edges of markings broader.

LOC. Cape York 11. Kuranda 2 3 4 9 10. Herberton 1. Brisbane 5 6 8 9. Wauchope 8. 18♂ 4♀.

The type specimen bears an erroneous locality: the species has only been taken north of Sydney, so the name given by Miskin is most unfortunate.

125. **Nacaduba perusia** Felder. (Amboina).

This is a widely distributed species in the Austro-Malayan Region.

125a. **N. perusia parma** nov. **Fig. 290, 291, 292, 293.**

♂. ABOVE. Forewing dull bluish purple: termen lined brown: cilia brown. Hindwing dull bluish purple: costa narrowly whitish: termen lined brown: cilia brown.

BENEATH. Forewing pale brown: markings typical: bar across cell, brown edged white: bar at end of cell and discal band, white obscurely edged brown and then whitish. Hindwing pale brown: markings typical: basal spots brown edged whitish: bar at end of cell and discal band (coalescing) white, obscurely edged brown and then whitish: a broad bar across cell at half, reaching vein 8 and dorsum, brown edged whitish: subcaudal and subtornal spots unequal, black faintly crowned yellow-brown.

♀. ABOVE. Forewing black: a large central area, reaching base and dorsum, white dusted pale metallic blue: cilia brown. Hindwing black: a central area, reaching base, white dusted metallic blue: cilia brown, at tips grey.

Beneath. Forewing as in male: bar at end of cell and discal band merged in a large central white area which reaches dorsum and vein 10. Hindwing as in male: bar at end of cell and discal band, merged in a central white area which reaches costa and dorsum.

Loc. Cape York 7. Cairns 2 8 10 12. Kuranda 1 2 3 4 5 6 7 10 11 12. Herberton 1. Ingham 5. Townsville 2 3 4. Mackay 1 2 4 11. Eidsvold 3. Brisbane 2 3 4 5. Richmond R. 3 4 5. 46♂ 46♀.

Seasonal variations are prevalent, those of the dry season being smaller with markings reduced. This subspecies has been erroneously confused with *P. dion* Godart, whose description represents *boeticus* rather than a race of *perusia*.

125b. **N. perusia felsina** nov.

♂. Above. Forewing bluish purple: termen lined brown: cilia brown. Hindwing bluish purple: costa brown: termen lined brown: cilia brown.

Beneath. Forewing brownish grey: markings typical: cell bar grey-brown edged whitish: bar at end of cell and discal band, grey edged brown and then whitish. Hindwing brownish grey: markings typical, grey edged brown and then whitish: subcaudal and subtornal spots unequal, black crowned yellow-brown.

♀. Above. Forewing black: a large discal area, reaching base and dorsum, white dusted pale metallic blue: cilia brown. Hindwing black: a central area, reaching base, white dusted metallic blue: cilia brown, at tips grey.

Beneath. Forewing as in male: bar at end of cell and discal band, only indicated by their brown edges, within a whitish central area reaching dorsum and vein 10. Hindwing as in male: bar at end of cell and discal band, only indicated by their brown edges, within a white central area reaching costa and dorsum.

Loc. Darwin 1 2 9 11. 3♂ 5♀.

The northwestern race of *perusia*: the markings are smaller than even in the dryseason specimens of the eastern race.

126. **Nacaduba ancyra** Felder. (Amboina).

This species ranges from the Moluccas to the Solomon Islands: we have specimens from Ceram and from the Aru Islands. All three Australian races differ from the typical form.

126a. **N. ancyra mysia** nov.

♂. Above. Forewing dull blue: termen narrowly lined black: cilia brown. Hindwing dull blue: costa dull brown: termen narrowly lined black: subcaudal and subtornal spots, unequal, small, black: cilia brown, at base narrowly whitish.

Beneath. Forewing grey-brown: markings typical, brown edged white. Hindwing grey-brown, markings typical, brown edged white: subcaudal and subtornal spots unequal, black crowned red.

♀. Above. Forewing brown-black: a large central area, reaching base and dorsum, pale blue: cilia grey. Hindwing grey-black: a large central area, reaching base, pale blue: termen with a series of spots, brown-black edged whitish: a subcaudal spot dull black crowned reddish orange: cilia grey.

Beneath as in male.

Loc. Prince of Wales Is. 8 9. Banks Is. 2 3. Darnley Is. 4 5 6 12. Murray Is. 9. 30♂ 21♀.

It is somewhat difficult to separate examples from Banks Is., from typical *ancyra* from Amboina. Those from Murray Is. and Darnley Is. are less brightly coloured in the male.

126b. **N. ancyra estrella** nov. **Fig. 312.**

♂. Above. Forewing dull lilac: termen narrowly lined brown: cilia brown. Hindwing dull lilac: costa dull brown: termen narrowly lined brown: subcaudal and subtornal spots unequal, small, brown faintly crowned red: cilia brown, at base narrowly whitish.

Beneath. Forewing grey suffused whitish: markings typical, grey edged whitish. Hindwing grey suffused whitish: markings typical, grey edged whitish: subcaudal and subtornal spots unequal, small, black crowned orange-red.

♀. Above. Forewing brown: a central area, reaching base and dorsum, blue: cilia grey. Hindwing brown: a central area, reaching base, blue: termen with a series of obscure spots, brown faintly edged whitish: a subcaudal spot, dull black crowned orange: cilia grey.

Beneath as in male.

Loc. Cooktown 11. Cairns 11. Kuranda 1 2 3 10 11. Herberton 12. Ingham 5 9. Daly R. 4 Darwin 10 11. 15♂ 5♀.

A very dingy race of *ancyra*.

[illegible]

[illegible] and [illegible] base, only [illegible]

[illegible] average (typical, brown edged [illegible]

[illegible] 2 [illegible] 12. [illegible]

[illegible] 11. Harrison 12 [illegible]

Port Macquarie 3.4/1918 Toronto 4/.7

126c. **N. ancyra florinda** Butler. **Fig. 318, 319, 320, 321.**

Annals Magazine Natural History 1877, xx, p. 354.

♂. Above. Forewing lilac: termen narrowly lined brown: cilia brown. Hindwing lilac: costa dull brown: termen narrowly brown: subcaudal and subtornal spots unequal, small, brown: cilia brown, at base narrowly whitish.

Beneath. Forewing grey: termen broadly suffused whitish: markings typical, brown edged whitish. Hindwing grey: termen broadly suffused whitish: markings typical, brown edged whitish: subcaudal and subtornal spots, unequal, small, black crowned orange.

♀. Above. Forewing brown: a small central area, reaching base and dorsum, blue: cilia grey. Hindwing brown: a small basal suffusion, blue: termen with a series of obscure spots, brown faintly edged whitish: a subcaudal spot, brown-black crowned orange: cilia grey.

Beneath as in male.

Loc. Townsville 10 11. Mackay 2 3 4 11. Eidsvold 3. Brisbane 2 3 4 5 6 9. Richmond R. 1 2 3 4 9 10. 11. Manning R. 3. Illawarra. 12♂ 9♀.

Resembles *estrella* above, but differs beneath. Two forms of the female are shown in **figures** 320 and 321, the difference in the extent of the blue areas above being probably seasonal.

127. **Nacaduba hermus** Felder. (Amboina).

The races of this species are all easily recognised by the very pointed apex of the forewing.

127a. **N. hermus hyllus** nov. **Fig. 349, 350, 351.**

♂. Above. Forewing bronze brown: base suffused purplish: termen narrowly lined brown-black: cilia brown. Hindwing bronze brown: base tinged purplish: costa brown: termen narrowly lined brown: cilia brown..

Beneath. Forewing pale brown: markings typical, brown faintly edged whitish. Hindwing pale brown: markings typical, brown faintly edged whitish: subcaudal spot large, subtornal spot minute, black crowned yellow-brown.

♀. Above. Forewing brown-black: an obscure small central area, reaching base and dorsum, faintly blue: termen narrowly lined black: cilia brown. Hindwing brown-black: a series of subterminal rings, whitish, with a subcaudal spot, black edged whitish: termen narrowly lined black: cilia yellow-brown.

Beneath. Forewing pale yellow-brown: markings as in male, yellow-brown. Hindwing pale yellow-brown: markings as in male, yellow-brown.

Loc. Cape York 1. Cooktown 10 12. 3♂ 1♀.

We have only one example of the female and this was taken in a different locality to the males, but we are confident they are correctly sexed.

128. **Nacaduba atrata** Horsfield. (Java).

128a. **N. atrata berenice** Herrich-Schaeffer. **Fig. 281, 282, 283, 284.**

Stettiner Entomologische Zeitung 1869, p. 74.

♂. Above. Forewing dull lilac: base narrowly bluish: termen narrowly lined brown: cilia grey-brown. Hindwing dull lilac: base narrowly bluish: costa dull brown: termen narrowly lined brown: cilia grey-brown.

Beneath. Forewing pale brown: markings typical, pale brown edged brown and then whitish. Hindwing pale brown: markings typical, pale brown edged dark brown and then whitish: subcaudal spot large, subtornal spot minute, black crowned yellow-brown.

♀. Above. Forewing brown-black: a large central area, reaching base and dorsum, variably pale blue, darker towards base: cilia grey-brown. Hindwing brown-black: a variable central area, reaching base, pale blue, darker towards base: termen with a series of distinct rings, whitish, that in area 2 enclosing a large subcaudal spot, black: cilia grey-brown.

Beneath as in male.

Loc. Darnley Is. 4 5 6 12. Murray Is. 9. Cooktown 11. Ingham 5. Townsville 4 7 10 11. Mackay 1 2 3 4 10. Eidsvold 2 3. Brisbane 2 3 4 5 6 7. Richmond R. 1 2 3 4 5 9 10. Manning R. 3. 41♂ 32♀.

The female of this species shows marked seasonal variation. The brighter summer form with smaller blue areas is shown in **figure 282**, and the winter form, with more extensive but paler blue areas, is shown in **figure 283**.

129. **Nacaduba nora** Felder, (Amboina).

We have a Ceram specimen that agrees well with Felder's figure.

129a. **N. nora auletes** nov. **Fig. 352, 359**

♂. Above. Forewing lilac-purple: termen narrowly lined brown-black: cilia brown. Hindwing lilac-purple: costa brown: termen narrowly lined brown-black: cilia brown.

Beneath. Forewing pale brown: markings typical, yellow-brown edged brown and then whitish. Hindwing pale brown: markings typical, yellow-brown edged brown and then whitish: subcaudal spot large, subtornal spot minute, black crowned yellow-brown.

♀. Above. Forewing brown-black: a central area, reaching base and dorsum, pale blue: cilia brown. Hindwing brown-black: termen with a series of rings, whitish, that in area 2 enclosing a subcaudal spot, black: cilia brown.

Beneath yellow-brown: markings as in male.

Loc. Cape York (type) 4 7 8. Prince of Wales Is. 6 7. Banks Is. 2. Darnley Is. 4 6 12. Kuranda 3. 10♂ 12♀.

This species is not unlike a small *berenice,* and has also been confused with *felderi* and the tailless *dubiosa.* Though somewhat obscure, it is distinctly separated from all these allied species. Specimens from the type locality are more like *N. felderi* than those from the islands, but can be at once separated by the different colour above, and the longer tail to vein 2 of hindwing.

130. **Nacaduba felderi** Murray. **Fig. 353, 354, 355**

Transactions Entomological Society London 1874, p. 527, pl. 10, fig. 4, 6.

♂. Above. Forewing bronze brown tinged purplish: termen narrowly brown: cilia brown. Hindwing bronze brown tinged purplish: costa obscurely brown: termen narrowly brown: tail to vein 2 very short: cilia brown.

Beneath. Forewing grey-brown: markings typical, pale brown edged whitish: subcaudal spot large, subtornal spot minute, black crowned dull yellow-brown.

♀. Above. Forewing dark brown: a central area, reaching base and dorsum, pale blue, towards base darker: termen narrowly lined brown-black: cilia brown. Hindwing dark brown: an obscure central area, reaching base, pale blue: termen with a series of rings, whitish, that in area 2 enclosing a subcaudal spot, brown-black: tail as in male: cilia brown.

Beneath pale grey-brown: markings as in male.

Loc. Brisbane 2 4 5 6. Richmond R. 4 5 8.9.10 Ebor 12. Manning R. 3. Sydney 2. Illawarra 3 4. 24♂ 17♀.

131. **Nacaduba dubiosa** Semper. **Fig. 356, 357, 358**

Museum Godeffroy Lepidoptera, XIV, p. 158, 1878.

♂. Above. Forewing purplish brown: base tinged purple: termen narrowly lined brown-black: cilia brown. Hindwing purplish brown: base tinged purple: costa brown: termen narrowly brown-black: cilia brown.

Beneath. Forewing pale brown: markings typical, pale brown edged brown and then faintly whitish. Hindwing pale brown: markings typical, pale brown edged brown and then faintly whitish: subtornal spot in area 2 large, in area 1a small, black crowned pale yellow-brown.

♀. Above. Forewing brown: a central area, reaching base and dorsum, blue: termen narrowly brown-black: cilia brown. Hindwing brown: an obscure central area, reaching base, blue: costa grey-brown: termen with a series of obscure rings, whitish, that in area 2 enclosing a large subcaudal spot, dark brown: cilia grey.

Beneath as in male.

Loc. Cape York 5 8. Cooktown 10 11 12. Cairns 6 7 8. Kuranda 2 4 5 6 7 8 10 11 12. Herberton 12. Ingham 9. Townsville 5 6 10 11. Mackay 4 5 9 11. Brisbane 12. Richmond R.2.5.11. Darwin 4 8 9 10 11 12. 47♂ 32♀.

Toronto L/T. Port Macquarie 3.4/1915.

H. [illegible] sp. nov. Fig. [illegible]

[illegible] dark [illegible] brown

[illegible] Wales [illegible] 6 7 [illegible] Darnay [illegible] 4 5 [illegible]

[illegible] and [illegible]

[illegible] tail to vein 2 [illegible]

[illegible] Murray. Fig. [illegible]

[illegible] termen narrowly brown; [illegible] brown; termen narrowly brown [illegible] tail to vein [illegible]

[illegible] typical, pale brown [illegible] dull yellow-brown.

[illegible] central area reaching base and dorsum, pale blue [illegible]

[illegible] typical, pale brown [illegible] elongated [illegible]

Richmond R. 10.   Toronto W.O.F.

132. **Nacaduba biocellata** Felder. **Fig. 322, 323, 324.**

Reise Novara Lepidoptera, ii, p. 280, pl. 35, fig. 14, 1865.

♂. Above. Forewing silky lilac: base dark blue: termen narrowly brown: cilia grey-brown. Hindwing silky lilac: base dark blue: termen narrowly brown: a pair of terminal spots in areas 1a and 2, brown: cilia grey-brown.

Beneath. Forewing pale yellow-brown: markings typical, obscure, yellow-brown edged brown and then whitish: bar across cell absent. Hindwing pale brown: markings typical, pale brown edged brown and then faintly whitish: a pair of terminal spots in areas 1a and 2, black ringed pale yellow-brown.

♀. Above. Forewing dull brown: base sometimes dusted blue: termen narrowly brown: cilia grey-brown. Hindwing pale brown: base sometimes dusted blue: termen narrowly lined brown: a pair of terminal spots in areas 1a and 2, black ringed pale yellow-brown: cilia grey-brown.

Beneath as in male.

Loc. Kuranda 1. Ingham 5. Townsville 5 6. Mackay 2 3 4 8 9. Eidsvold 3. Brisbane 1 5 12. Ebor 1 12. Manning R. 3. Sydney 1 2 3 9 10 11 12. Illawarra 1 2 3 9. Blue Mts. 1 12. Pambula 12. Wandin 9 11. Gisborne 1 4 11 12. Castlemaine 9 10 11. Sea Lake. Dimboola 11. Adelaide (type). Kalgoorlie. Yallingup 9. Waroona 4 5. Cunderdin 10. Roebourne. 57♂ 41♀.

This widespread and abundant species may be recognised by its small size, the absence of a tail, and the absence of a spot in middle of cell of forewing beneath.

133. **Nacaduba ios** nov. **Fig. 856, 857.**

♂. Above. Forewing steely purple: termen narrowly brown: cilia brown. Hindwing steely purple: costa brown: termen narrowly brown: cilia brown.

Beneath. Forewing grey-brown: markings typical, grey-brown faintly edged whitish: a double series of faint subterminal spots, brown faintly edged whitish. Hindwing grey-brown: markings typical, grey-brown faintly edged whitish: a pair of subtornal spots in areas 1a and 2, small, black edged whitish.

♀. Above. Forewing brown-black: an obscure central area, reaching base and dorsum, dark blue: cilia grey-brown. Hindwing brown-black: base tinged blue: cilia grey.

Beneath as in male.

Loc. Thursday Is. 1. Banks Is. 2 3. 2♂ 3♀.

A very dingy tailless species, with a resemblance beneath to the genus *Jamides*.

Genus **EVERES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 69, 1816.

Forewing with vein 11 anastomosed with vein 12 for a short distance, but with basal and terminal portions free. Hindwing with termen rounded: with a short filamentous tail to vein 2. Eyes smooth.

Type. *Everes argiades* Pallas, from Europe.

134. **Everes argiades** Pallas. **Fig. 346, 347, 348.**

Reise, i, Appendix, p. 472, 1771.

♂. Above. Forewing bluish lilac: termen obscurely brown: cilia grey. Hindwing bluish lilac: costa and termen obscurely brown: termen with a series of rings, whitish, those in area 2 and 3 centred black and crowned reddish orange: cilia grey.

Beneath. Forewing greyish white: a faint narrow bar at end of cell, and a series of faint discal streaks, grey: traces only of a series of subterminal spots, greyish. Hindwing greyish white: a faint narrow bar at end of cell, and a series of faint discal streaks, greyish: two dots in area 7, one in middle of cell, and one in area 1a, black: a tornal patch, broadly orange-red, with a subcaudal spot, and a spot in area 3, black.

♀. Above. Forewing grey: cilia greyish white. Hindwing grey: termen with a series of rings, whitish, those in areas 2 and 3 centred black and crowned reddish orange: cilia greyish white.

Beneath as in male.

Loc. Darnley Is. 1 2 12. Claudie R. 1. Cooktown 10 11. Kuranda 1 2 11 12. Atherton 3. Herberton 1. Chillagoe 3. Townsville 2 3 4 5 9. Mackay 3 4 5 9 10 11. Brisbane 2 4. Richmond R. 1 12.10. Daly R. 4. 34♂ 21♀.

Some examples of the females show a central area on forewing above, obscurely pale lilac.

Genus **EUCHRYSOPS** Butler.

Entomologist 1900, p. 1.

Forewing with vein 11 free from vein 12: these veins bent towards each other but not touching. Hindwing with termen rounded: with a short filamentous tail to vein 2. Eyes smooth.

TYPE. *Euchrysops cnejus* Fabricius, from India.

Separated from *Catochrysops* by its smooth eyes.

135. **Euchrysops cnejus** Fabricius. (India).

This species ranges from India to Samoa.

135a. **E. cnejus cnidus** nov. **Fig. 316, 317, 332.**

♂. ABOVE. Forewing pale lilac: base tinged blue: termen narrowly grey-brown: cilia grey-brown. Hindwing pale lilac: costa and termen narrowly brown: subcaudal and subtornal spots, black obscurely crowned orange: cilia grey-brown.

BENEATH. Forewing grey-brown: markings typical, brown edged whitish: bar at end of cell obscure. Hindwing grey-brown: markings typical, brown edged whitish: a basal and a discal spot in area 7, a spot in middle of cell, and a minute spot in area 1c, black edged whitish: subcaudal and subtornal spots, black broadly crowned orange.

♀. ABOVE. Forewing pale brown: a variable central area, reaching base and dorsum, blue: cilia grey-brown. Hindwing pale brown: a variable central area, blue: a discal series of obscure lunules, whitish: termen with a series of large rings, whitish, those in areas 1a and 2 centred black and broadly crowned orange: cilia grey.

BENEATH as in male.

LOC. Cape York 3. Banks Is. 2 3. Darnley Is. 4 5. Murray Is. 9. Cairns 2 9. Kuranda 1 4 5 6 7 9 10 11 12. Ingham 9. Townsville 3 4 7 11. Mackay 1 2 3 4 9 11 12. Brisbane 2 3 4. Richmond R. 9. Daly R. 4. 69♂ 41♀.

Genus **SYNTARUCUS** Butler.

Proceedings Zoological Society London 1900, p. 929.

Forewing with vein 11 free from vein 12: these veins bent towards each other but not touching. Hindwing with termen evenly rounded: with a short filamentous tail to vein 2. Eyes hairy.

TYPE. *Syntarucus telicanus* Lang, from India.

136. **Syntarucus telicanus** Lang. (India).

136a. **S. telicanus pseudocassius** Murray. **Fig. 244, 245, 254.**

Entomologists' Monthly Magazine 1873, p. 126.

♂. ABOVE. Forewing pale lilac tinged blue: termen obscurely brown: cilia grey-brown. Hindwing pale lilac tinged blue: termen obscurely brown: cilia greyish.

BENEATH. Forewing pale brown: markings typical, rich brown edged white: discal band irregular and joined to bar at end of cell by a spot in base of area 3: white edges below vein 6 coalescing, hence pale brown of wing only present subcostally: termen with a series of rings, white. Hindwing pale brown: a subcostal spot in base, and a bar across cell at half, reaching vein 8 and dorsum, rich brown broadly edged white: a small spot in end of cell, coalescing with a broad irregular discal band, rich brown broadly edged white: a series of broad lunular subterminal spots, white: termen with a series of rings, white, those in areas 1a and 2, centred black and ringed pale yellow-brown.

♀. ABOVE. Forewing grey-black: a central area, reaching base and dorsum, whitish dusted pale blue: a bar at end of cell and a series of discal spots, grey-black: cilia grey-brown. Hindwing grey-black: a central area, reaching base, obscurely bluish: an obscure spot in cell and a series of obscure discal spots, whitish: termen with traces of a series of rings, whitish, those in areas 1a and 2, centred brown-black: cilia greyish.

BENEATH as in male.

LOC. Cairns 7. Kuranda 10. Herberton 1. Ingham 5. Townsville 3 4 5 10 11. Mackay 2 3 4 5 11 12. Eidsvold 2 3. Brisbane 1 2 3 4 5 12. Stradbroke Is. 12. Richmond R. 3. Manning R. 3. Sydney 3 4. 37♂ 29♀.

[illegible] 1879, p. 1.

[illegible]

[illegible] from India.

[illegible] 1877, p. [illegible]

[illegible]

Richmond R. 3. GAW 1920

Genus **JAMIDES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 71, 1816.

Forewing with vein 11 connected with vein 12 by a short vein. Hindwing with termen rounded: with a short filamentous tail to vein 2. Eyes slightly hairy.

Type. *Jamides bochus* Cramer, from India.

137. **Jamides phaseli** Mathew. **Fig. 294, 295, 296.**

Transactions Entomological Society London 1889, p. 311.

♂. Above. Forewing dark silky purple: termen brown-black: cilia brown. Hindwing dark silky purple: costa broadly dull brown: termen narrowly brown-black: cilia grey-brown.

Beneath. Forewing pale brown: markings typical, indicated only by whitish edges: cell spot absent. Hindwing pale brown: markings typical, indicated only by whitish edges: termen with a series of obscure rings, whitish, those in areas 1a and 2, black dusted metallic green and crowned orange.

♀. Above. Forewing dull brown: a central area, reaching base and dorsum, dull bluish purple: cilia brown. Hindwing dull brown: a large central area, reaching base, dull bluish purple: termen with a series of obscure rings, whitish, that in area 2 centred brown-black: cilia grey-brown, at base narrowly whitish.

Beneath as in male.

Loc. Cape York 4 11. Prince of Wales Is. 6. Cooktown 4 11. Cairns 5. Kuranda 2 3 4 5 6 11. Atherton 3 12. Herberton 2. Ingham 9. Townsville 5 11. Mackay 2 3 4 5. Brisbane 3 4 7. Darwin 2 9. 30♂ 29♀.

138. **Jamides amarauge** Druce. **Fig. 268.**

Proceedings Zoological Society London 1891, p. 366, pl. 31, fig. 20, 21.

♂. Above. Forewing silvery blue: apex very broadly and termen broadly, dull black: cilia dull black. Hindwing silvery blue: termen dull black, with a series of rings, whitish, that in area 2 suffused bluish and centred black: cilia dull black with base narrowly whitish.

Beneath. Forewing grey-brown: markings typical, indicated only by narrow whitish edges: cell spot absent. Hindwing grey-brown: markings typical, indicated only by narrow whitish edges: termen with a series of rings, whitish, those in areas 1a and 2, black dusted metallic green and crowned bright orange.

♀. Above. Forewing dull black: a central area, reaching base and dorsum, blue: cilia dull black. Hindwing dull black: a large central area, reaching base, blue: termen with a series of obscure rings, whitish, that in area 2 centred black: cilia dull black, at base narrowly whitish.

Beneath as in male.

Loc. Darnley Is. 4 5. 7♂ 1♀.

Genus **PEPLIOPHORUS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 71, 1816.

Forewing with vein 11 connected with vein 12 by a short vein. Hindwing with termen rounded: with a short filamentous tail to vein 2. Eyes hairy.

Type. *Pepliophorus hylas* Cramer, from the Moluccas.

139. **Pepliophorus aleuas** Felder. (Mysol).

139a. **P. aleuas coelestis** Miskin. **Fig. 162, 163, 164.**

Synonymical Catalogue Rhopalocera Australia, p. 50, 1891.

♂. Above. Forewing pale silky blue: a central area from dorsum to vein 4, white: apex and termen narrowly black: cilia dull black. Hindwing pale silky blue: a broad central area, reaching dorsum and costa but not quite reaching base, white: termen narrowly lined black: cilia dull black.

Beneath. Forewing dull black: central area as above: termen with a series of spots, white. Hindwing dull black: a broad central area, reaching dorsum and costa, but not reaching base, white: a series of lunular subterminal spots, metallic green: termen with a series of spots, white, those in areas 1a and 2 dusted metallic green.

♀. Above. Forewing black: base and cell silky blue: a central area from dorsum to vein 4, white: cilia dull black. Hindwing black: base and subtornus suffused pale silky blue: a broad central area, reaching costa and dorsum, white: cilia dull black.

Beneath as in male.

Loc. Cairns 1 2 3 8 10 12. Kuranda 1 2 3 4 5 6 8 9 10 11 12. 39♂ 38♀.

140. **Pepliophorus hylas** Cramer. (Moluccas.)

140a. **P. hylas eclectus** Grose-Smith. **Fig. 265.**

Novitates Zoologicae 1894, p. 589.

♂. Above. Forewing pale blue: a central area from dorsum to vein 4, white: apex and termen narrowly black: cilia dull black. Hindwing pale blue: a broad central area, reaching costa and dorsum but not quite reaching base, white: termen narrowly lined black: cilia dull black.

Beneath. Forewing brown: central area as above: a bar at end of cell, and a discal band from vein 9 to vein 6, brown faintly edged whitish: termen with a series of faint irregular rings, whitish. Hindwing brown: central white area as above: an irregular discal band from dorsum to vein 7, brown edged whitish: a series of elongate subterminal spots, rich brown edged bluish white: a subterminal line, white.

♀. Above. Forewing dull black: cell and base broadly pale blue: a central area from dorsum to vein 4, white: cilia dull black. Hindwing black: base and subtornus suffused pale blue: a broad central area, reaching dorsum and costa, white: cilia dull black.

Beneath as in male.

Loc. Darnley Is. 3♂ 2♀ (2♂ 2♀ in Macleay Museum).

141. **Pepliopborus amphissa** Felder. (Batchian).

141a. **P. amphissa claudia** nov.

♂. Above. Forewing silky blue towards dorsum shading paler: apex and termen narrowly lined black: cilia dull black. Hindwing silky blue towards costa shading paler: termen narrowly lined black: cilia dull black.

Beneath. Forewing pale brown: a series of narrow edgings indicating a bar across cell, a discal band and a subterminal series of spots, whitish. Hindwing pale brown: a series of edgings indicating a band across cell and reaching vein 8 and dorsum, a bar at end of cell and a discal band, whitish: a series of subterminal spots, brown edged whitish with a small spot in apex, black: subcaudal spots in area 1a and area 2, black dusted metallic blue and margined orange.

♀. Above. Forewing black: a large central area, reaching base and dorsum, white: costa to beyond cell broadly silky blue: cilia dull black. Hindwing black: a large central area, reaching base and dorsum, silky blue: costa white: termen with traces of a series of obscure subterminal rings, silky blue, that in area 2 enclosing a large subcaudal spot, deep black: cilia dull black.

Beneath. Forewing brown: white area as above, but larger: edging of discal band in areas 5 and 6, and of series of subterminal spots, narrow, whitish. Hindwing brown: costa broadly white: edgings as in male, but the two apical spots of subterminal series, large and black: an interrupted narrow terminal line, whitish.

Loc. Claudie R. 11. 6♂ 5♀.

Genus **LAMPIDES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 70, 1816.

Forewing with vein 11 free from vein 12 and straight: vein 12 bent towards vein 11. Hindwing with termen slightly produced at tornus: with a long filamentous tail to vein 2. Eyes hairy.

Type. *Lampides boeticus* Linne, from Europe.

Richmond R. 4.11.

Toronto ⓌⒹⒻ Port Macquarie 3.4, 1915 Wandin 11.10.15 (ANB)

142. **Lampides boeticus** Linne. (Europe).

142a. **L. boeticus damoetes** Fabricius. **Fig.** 285, 286, 287.

Systema Entomologiae, p. 526, 1775.

♂. Above. Forewing purplish lilac, covered with long hairs, whitish: base blue: termen narrowly brown: cilia greyish. Hindwing purplish lilac, covered with long hairs, whitish: base blue: costa and termen narrowly brown: an obscure subcaudal and subtornal spot, small, black: cilia greyish white.

Beneath. Forewing pale grey-brown: markings typical, whitish broadly edged brown and then narrowly edged whitish: a subterminal band, whitish: termen with a band of obscure rings, faintly whitish. Hindwing pale brown: markings typical, narrowly and faintly whitish, broadly edged brown and then narrowly and faintly edged whitish: a broad subterminal band, white: termen with a series of obscure rings, whitish, those in areas 1a and 2, black dusted metallic green and crowned pale orange.

♀. Above. Forewing brown: an obscure large central area, reaching dorsum, suffused pale blue: base blue: cilia greyish white. Hindwing brown: an obscure large central area, suffused pale blue: base blue: termen with a series of obscure rings, whitish, those in areas 1a and 2, large, black: cilia greyish white.

Beneath as in male.

Loc. Thursday Is. 3. Prince of Wales Is. 3 5 7. Darnley Is. 6. Murray Is. 8 9. Kuranda 6. Ingham 5 9. Townsville 6. Mackay 2. Eidsvold 2 3. Brisbane 5 6 10. Manning R. 3. Sydney 1 2 3 4 5 6 10. Wandin 12. Melbourne 3 10 12. Gisborne 9 10 11. Castlemaine 9 10. Birchip. Kerang. Carnarvon. Darwin 12. 31♂ 32♀.

Genus **CATOCHRYSOPS** Boisduval.

Voyage Astrolabe Lepidoptera, p. 87, 1832.

Forewing with vein 11 free from vein 12, but bent towards and touching it. Hindwing with termen slightly produced at tornus: with a long filamentous tail to vein 2. Eyes hairy.

Type. *Catochrysops strabo* Fabricius, from Java.

143. **Catochrysops platissa** Herrich-Schaeffer. **Fig.** 303, 304, 305.

Stettiner Entomologische Zeitung 1869, p. 74, pl. 4, fig. 20.

♂. Above. Forewing pale grey-blue: costa dusted white: termen narrowly lined brown: cilia grey. Hindwing pale grey-blue: termen narrowly lined brown: a small subcaudal spot, black: cilia grey.

Beneath. Forewing greyish white: markings typical, pale brown faintly edged whitish: cell spot absent. Hindwing greyish white: markings typical, pale brown faintly edged whitish: a pair of subcostal spots in area 7, brown-black ringed whitish: subcaudal spot large, subtornal spot small, obscure, black crowned pale orange.

♀. Above. Forewing grey-brown: a variable central area, reaching base and dorsum, pale blue, darker towards base: cilia grey. Hindwing grey-brown: a variable central area, reaching base, pale blue: a series of obscure subterminal spots, whitish: termen with a series of obscure rings, whitish, and a large subcaudal spot, black crowned orange: cilia grey.

Beneath as in male.

Loc. Cape York 4 5 7 8 9 11. Prince of Wales Is. 5. Banks Is. 2 3. Darnley Is. 4 5 6. Murray Is. 9. Claudie R. 1. Cooktown 10 11. Cairns 6 7 8 10. Kuranda 1 3 4 5 6 7 8 9 10 11 12. Atherton 12. Herberton 1 2. Chillagoe 3. Ingham 5 9. Townsville 10 11. Mackay 2 3 4 8 9 11 12. Brisbane 2 3. Byron Bay. Daly R. 4. Darwin 4 9. 54♂ 23♀. West. [illegible] ♀. (ANB) [illegible].

A series of females bred in July have very large central areas above, bluish white: these areas are much smaller, and not whitish, in females caught in February.

144. **Catochrysops amasea** nov.

♂. Above. Forewing dull lilac-blue: termen faintly brown: cilia brown. Hindwing dull lilac-blue: termen faintly brown: a small subcaudal spot, dull black: cilia brown.

Beneath. Forewing dull greyish white: markings typical, grey-brown faintly edged whitish: cell spot absent. Hindwing dull greyish white: markings typical, grey-brown faintly edged whitish: a pair of subcostal dots in area 7, brown ringed whitish: a subcaudal spot black crowned pale orange.

♀. Above. Forewing pale grey-brown: central area faintly pale blue: cilia grey. Hindwing pale grey brown: termen with a series of obscure rings, whitish, and a subcaudal spot, brown-black crowned pale orange: cilia grey.

Beneath as in male.

Loc. Banks Is. 2 3. Darnley Is. 4 5 6. Murray Is. 9. 7♂ 3♀.

Distinguished from *platissa* by its smaller size, and by the blunter apex and more convex termen of the forewing.

Genus **LYCAENESTHES** Moore.

Proceedings Zoological Society London 1865, p. 773.

Forewing with vein 11 free from vein 12 and straight: vein 12 bent towards vein 11. Hindwing with three short, highly ciliated, small tails to veins 1a, 2 and 3. Eyes hairy.

Type. *Lycaenesthes emolus* Godart, from India.

145. **Lycaenesthes emolus** Godart. (India).

145a. **L. emolus affinis** Waterhouse & Turner. **Fig. 288, 289, 297**

Proceedings Linnean Society N. S. Wales 1904, p. 801 (1905).

♂. Above. Forewing silky purple: termen narrowly lined black: cilia grey. Hindwing silky purple: costa dull brown-black: termen narrowly lined black: subcaudal spots in areas 1a and 2, black: tails whitish: cilia grey.

Beneath. Forewing grey-brown: markings typical, pale brown edged whitish: cell spot absent: discal band irregular. Hindwing grey-brown: markings typical, pale brown faintly edged whitish: a subcaudal spot in area 2, black crowned dull orange-red.

♀. Above. Forewing dark brown: a central area, reaching base and dorsum, pale bluish: cilia grey. Hindwing dark brown: a central area, reaching base, faintly dusted pale blue: termen with a series of obscure rings whitish, those in areas 1a and 2, centred black: tails whitish: cilia grey.

Beneath as in male.

Loc. Cape York 3 5 9 11. Thursday Is. 1 4 5 12. Prince of Wales Is. 5 6. Banks Is. 2 3. Darnley Is. 4 6 12. Cooktown 1 10 11 12. Cairns 2 6 7 11 12. Kuranda 1 3 5 7. Mackay 1 2 3 4 11. Rockhampton 1 12. Daly R. 4. Darwin 8 9 10 11 12. Melville Is. 69♂ 47♀.

146. **Lycaenesthes godeffroyi** Semper. **Fig. 298, 306, 307**

Journal Museum Godeffroy Lepidoptera, p. 164, 1878.

♂. Above. Forewing dull lilac: termen very narrowly lined brown: cilia greyish. Hindwing dull lilac: costa brown: termen very narrowly lined brown: tails whitish: cilia greyish.

Beneath. Forewing grey-brown: markings typical, pale brown faintly edged whitish: cell spot absent: discal band straight. Hindwing grey-brown: markings typical, pale brown edged whitish: a small subcaudal spot in area 2, black crowned orange.

♀. Above. Forewing grey-black: a broad central area, reaching base and dorsum, pale blue: an obscure central patch, whitish: cilia grey-white. Hindwing grey-black: a broad central area, reaching base, dusted blue: a series of obscure subterminal spots, whitish: termen with a series of rings, whitish, those in areas 1a and 2, centred dull black: tails whitish: cilia grey-white.

Beneath. Forewing as in male: area between bar at end of cell and discal band, reaching dorsum, whitish. Hindwing as in male.

Loc. Cape York 5 7 8. Darnley Is. 5 6. Cairns 4 7. Kuranda 1 3 5 12. Herberton 1 2. Darwin 9 11. 34♂ 33♀.

Genus **CHILADES** Moore.

Lepidoptera of Ceylon, p. 76, 1881.

Forewing with vein 11 and vein 12 bent towards each other, but not touching: costa and termen evenly arched. Hindwing with termen evenly rounded: vein 3 from before lower apex of cell. Eyes smooth.

Type. *Chilades laius* Cramer, from India.

[illegible]

[illegible] Fig. [illegible]

[illegible] 1922.

[illegible]

[illegible] ously, [illegible] cilia;

[illegible]

[illegible] Livingston 12. [illegible] Stirling [illegible]

[illegible]

[illegible] brown; cilia [illegible] grey-brown.

[illegible]

Kosciusko (GAW) Mch 1920. Dec 21. Comma Mt. (GAW) 13.2.20 Quorn S.A. (Elston) Nov 1918 Port Macquarie 3.11/1918 Wandin 12.10.15 (AWB) Toronto 4/7

Urunga Ⓦ Oct 19[illegible]

147. **Chilades trochilus** Freyer. (Europe).

147a. **C. trochilus putli** Kollar. **Fig. 325, 326.**

Hugel's Kaschmir, iv, pt. 2, p. 422, 1848.

♂. Above. Forewing dull bronze brown: termen narrowly brown: cilia brown. Hindwing dull bronze brown: termen narrowly brown, with a series of obscure spots, dark brown: cilia whitish.

Beneath. Forewing pale brown: markings typical, indicated only by whitish edges: cell spot absent. Hindwing pale brown: markings typical, indicated only by whitish edges: basal markings sometimes brown-black: termen yellow-brown, with a series of six large spots, black dusted metallic green.

♀. Above and Beneath as in male.

Loc. Kuranda 1. Townsville 4 5. Ingham 5. Mackay 2 4 6 9 10 11. Darwin 1. 32♂ 15♀. This species, and *Z. gaika attenuata* are the two smallest butterflies taken in Australia.

Westwood Q. ANB 27.

Genus **ZIZINA** Chapman.

Transactions Entomological Society London 1910, p. 482, 488.

Forewing with vein 11 free from vein 12, but bent towards and touching it. Hindwing with termen evenly rounded. Eyes hairy.

Type. *Zizina labradus* Godart, from Australia.

148. **Zizina labradus** Godart.

The most abundant butterfly in Australia: plentiful in the Pacific islands, and ranging to India.

148a. **Z. labradus labradus** Godart. **Fig. 380, 381.**

Encyclopedie Methodique, p. 680, 1819.

♂. Above. Forewing bluish lilac: costa suffused whitish: termen narrowly grey-brown: cilia grey. Hindwing bluish lilac: costa broadly and termen narrowly, pale brown: cilia grey.

Beneath. Forewing greyish white: markings typical, small, grey-brown: cell spot absent: area between discal band and subterminal spots, whitish. Hindwing greyish white: markings typical, small, grey-brown.

♀. Above. Forewing pale brown: an obscure central area, reaching base and dorsum, blue: cilia grey. Hindwing pale brown: a central area, reaching base, faintly blue: cilia grey.

Beneath as in male.

Loc. Cooktown 10. Cairns 6 7. Kuranda 3 6 7 12. Atherton 3 11 12. Herberton 12. Ingham 5 9. Townsville 5 6. Mackay 1 2 3 4 8 10 11 12. Eidsvold 1 11. Brisbane 1 4 5 6 7 10. Stradbroke Is. 12. Richmond R. 5 9 10. 11 Port Macquarie 10. Manning R. 3. Sydney 1 2 3 4 9 10 11 12. Illawarra 1 3 4 9 10. Blue Mts. 1 2 10 11. Moruya 4. Pambula 12. Mt. Kosciusko 1. Mt. St. Bernard 1 2. Wandin 3. Melbourne 10. Gisborne 1 2 3 4 5 10 11 12. Castlemaine 1 2 3 4 9 10 11 12. Kerang. Lorne 2 3. Dimboola 11. Launceston 12. Hobart. Yallingup 11. Stirling Ranges 10. Waroona 1 4 11 12. Bridgetown 2 11. Kalgoorlie 5. Watheroo 11. Carnarvon. Darwin 5. 85♂ 70♀.

148b. **Z. labradus labdalon** nov.

♂. Above. Forewing lilac: apex and termen broadly brown: cilia grey. Hindwing lilac: costa broadly, and termen, brown: cilia grey.

Beneath. Forewing whitish: markings typical, small, well defined, grey-brown: cell spot absent. Hindwing whitish: markings typical, small, well defined, grey-brown.

♀. Above. Forewing brown: cilia grey-brown. Hindwing brown: cilia grey-brown.

Beneath as in male.

Loc. Cape York 1 2 3 5. Prince of Wales Is. 5. Banks Is. 2 3. Darnley Is. 3 4 12. Murray Is. 8 9. Claudie R. 11. 21♂ 14♀.

149. **Zizina delospila** Waterhouse. **Fig. 255.**

Proceedings Linnean Society N. S. Wales 1903, p. 211, pl. 2, fig. 5.

♂. Above. Forewing dull brown: cilia white, at veins brown. Hindwing dull brown: cilia white, at veins brown.

Beneath. Forewing white: termen broadly brown: markings typical, dark brown: an extra spot in cell, and a spot in area 1a, dark brown. Hindwing white: markings typical, small, dark brown: an extra spot in cell, dark brown.

Loc. N.W. Australia (Macleay Museum). 1♂.

We place this species under this genus provisionally: further material is needed before its position is assured.

Genus **ZIZEERIA** Chapman.

Transactions Entomological Society London 1910, p. 482, 484.

Forewing with vein 11 free from vein 12, but bent towards and touching it. Hindwing with termen evenly rounded. Eyes smooth.

Type. *Zizeeria lysimon* Hubner, from Europe.

150. **Zizeeria alsulus** Herrich-Schaeffer. **Fig. 378, 379.**

Stettiner Entomologische Zeitung 1869, p. 75.

♂. Above. Forewing purplish lilac: apex broadly and termen, brown: cilia grey-brown. Hindwing purplish lilac: costa and termen, brown: cilia grey.

Beneath. Forewing greyish white: markings absent: termen narrowly lined grey-brown with a series of obscure rings, whitish. Hindwing greyish white: markings absent: termen narrowly lined grey-brown, with a series of very obscure rings, whitish centred grey-brown, and in area 2, black.

♀. Above. Forewing brown: a variable obscure central area, reaching base and sometimes reaching dorsum, pale blue: cilia grey-brown. Hindwing brown: cilia grey.

Beneath as in male: sometimes termen of hindwing with a second black spot in area 1a.

Loc. Cape York 2. Prince of Wales Is. 5 6. Banks Is. 2 3. Darnley Is. 6. Claudie R. 1. Cooktown 10. Cairns 6. Kuranda 2 3 5 6 10 11. Herberton 2. Ingham 5. Townsville 2 3 4 5 6. Mackay 1 2 3 8 9 10 11 12. Eidsvold 3. Brisbane. Wyndham 10. Daly R. 4. Darwin 9 12. Melville Is. 78♂ 49♀.

We are convinced that this is the older name for this species: under the name *lulu* Mathew, it is known from many of the Pacific islands.

151. **Zizeeria lysimon** Hubner. (Europe).

151a. **Z. lysimon karsandra** Moore. **Fig. 368, 369.**

Proceedings Zoological Society London 1865, p. 505, pl. xxxi, fig. 7.

♂. Above. Forewing purplish lilac: termen broadly and obscurely brown: cilia grey. Hindwing purplish lilac: costa and termen broadly and obscurely brown: cilia grey.

Beneath. Forewing grey: markings typical, small, brown-black: termen brown, with waved lines, whitish. Hindwing grey: markings typical, small, dark brown: termen brown with a series of obscure rings, whitish.

♀. Above. Forewing brown: an obscure central area, reaching base and dorsum, faintly purplish lilac: cilia grey. Hindwing brown: an obscure central area, reaching base, faintly purplish lilac: cilia grey.

Beneath as in male.

Loc. Townsville 2 10. Mackay 2 4. Eidsvold 1 2 3. Brisbane 2 3 4. Richmond R. 4. Darwin 3 4 12. 26♂ 20♀.

Genus **ZIZULA** Chapman.

Transactions Entomological Society London 1910, p. 482, 488.

Forewing with vein 11 anastomosed with vein 12, excepting for a short basal portion: costa and termen evenly arched. Hindwing with termen evenly rounded. Eyes smooth.

Type. *Zizula gaika* Trimen, from Africa.

Richmond R 10. GAW 1922

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Richmond R. 4.5. Sorrento 4/17

1♀ bred 12.11.1921 from larvae taken by L.B. Thorn at Bendigo /10/1921 on flowerheads Willyunnia ? sp.

Kosciusko 1–8 Dec 1921 (GAW) Richmond R. 9.10. (GAW 1922) Bendigo V. 11. Sorrento (W.D.F.)

152. **Zizula gaika** Trimen. (Africa).

152a. **Z. gaika attenuata** Lucas. **Fig. 366, 367**

Proceedings Linnean Society N. S. Wales 1889, p. 1066.

♂. Above. Forewing lilac: apex broadly, and termen, pale brown: cilia grey. Hindwing lilac: costa and termen narrowly pale brown: cilia grey.

Beneath. Forewing grey-white: markings typical, small, brown: cell spot absent. Hindwing greyish white: markings typical, small, brown.

♀. Above. Forewing pale brown: cilia grey. Hindwing pale brown: cilia grey.

Beneath as in male.

Loc. Prince of Wales Is. 6. Kuranda 6. Herberton 2. Ingham 5. Townsville 7. Mackay 1 2 3 4 5 9 10 11. Eidsvold 1. Brisbane 4 6. Southport 6. Manning R. 3. 40♂ 37♀.

Genus **NEOLUCIA** Waterhouse & Turner.

Proceedings Linnean Society N. S. Wales 1904, p. 803 (1905).

Forewing with vein 11 anastomosed with vein 12, excepting for a short basal portion: costa very slightly arched, in the male almost straight. Hindwing with termen rounded: sometimes with a very short tail to vein 2. Eyes hairy.

Type. *Neolucia agricola* Westwood, from Australia.

153. **Neolucia agricola** Westwood.

153a. **N. agricola agricola** Westwood. **Fig. 370, 372.**

Genera Diurnal Lepidoptera, ii, p. 496, pl. 76, fig. 4, 1852.

♂. Above. Forewing bronze brown: cilia white, at veins broadly brown. Hindwing bronze brown: cilia white, at veins broadly brown.

Beneath. Forewing pale brown: markings typical, brown edged dark brown and then whitish: terminal markings whitish, obscured. Hindwing pale brown: markings typical, rich brown, edged brown-black and very faintly whitish: discal band irregular, interrupted in area 2: a broad discal suffusion, whitish: spots of termen in areas 2 and 3, broadly crowned black.

♀. Above and Beneath as in male.

Loc. Brisbane 9. Stradbroke Is. 9 10. Port Macquarie 10. Sydney 9 10 11. Blue Mts. 10. Pambula 12. Mt. Kosciusko 1. Mt. Erica 2. Wandin. Melbourne 1 11. Gisborne 1 11 12. Sea Lake 10. Dimboola 11. Patersonia 1. Mt. Wellington 1 11 12. Adelaide 11. 66♂ 33♀.

153b. **N. agricola insulana** nov. **Fig. 371**

♂. Above. Forewing bronze brown: cilia white, at veins broadly brown. Hindwing bronze brown: cilia white, at veins broadly brown.

Beneath. Forewing brown: markings typical, broad, brown edged dark brown and then whitish: terminal markings obscured. Hindwing brown: markings typical, broad, dark brown edged black: discal band irregular, interrupted in area 2: a narrow discal suffusion, greyish white: obscured spots of termen in areas 2 and 3, crowned brown.

♀. Above and Beneath as in male.

Loc. Zeehan 1 2. 12♂ 5♀.

153c. **N. agricola occidens** nov.

♂. Above. Forewing bronze brown: cilia white, at veins broadly brown. Hindwing bronze brown: cilia white, at veins broadly brown.

Beneath. Forewing pale yellowish brown: markings typical but very obscure, pale brown faintly edged whitish: terminal markings absent. Hindwing pale brown suffused grey: markings typical but very obscure, yellow-brown edged brown: discal band irregular, interrupted in area 2: a faint discal suffusion, greyish: obscured spots of termen in areas 2 and 3, crowned yellow-brown.

♀. Above and Beneath as in male.

Loc. Stirling Ranges 10. Wilson's Inlet 11. Waroona 10 11 12. Perth 11. Cunderdin 10. Capel R. 10♂ 6♀.

This race of *agricola* approaches *N. mathewi* very closely beneath.

154. **Neolucia hobartensis** Miskin.

154a. **N. hobartensis hobartensis** Miskin. **Fig. 373, 374, 375, 376.**

Proceedings Linnean Society N. S. Wales 1890, p. 38.

♂. Above. Forewing bronze brown: cilia white, at veins broadly brown. Hindwing bronze brown: cilia white, at veins broadly brown.

Beneath. Forewing pale yellowish brown: markings typical, yellowish brown edged brown and then whitish. Hindwing dull brown suffused whitish: markings typical, small, brown edged dark brown: discal band irregular, *not* interrupted in area 2.

♀. Above and Beneath as in male. Cradle Mt. Tas (RJT) Jan 1917

Loc. Mt. Kosciusko 1 2 3. Mt. Hotham 2. Mt. Erica 2. Mt. Wellington 1 2. 36♂ 12♀.

154b. **N. hobartensis monticola** nov. **Fig. 831.**

♂. Above. Forewing bronze black: cilia white, at veins very broadly brown. Hindwing bronze black: cilia white, at veins very broadly brown.

Beneath. Forewing rich brown: markings typical, obscure, dark brown very faintly edged whitish. Hindwing rich brown: markings typical, dark brown edged whitish: discal band divided into obscure spots.

♀. Above and Beneath as in male.

Loc. Ebor (at 4500ft) 1. 9♂ 10♀.

Nearly double the size of *hobartensis hobartensis*, and much darker both above and beneath.

155. **Neolucia mathewi** Miskin. **Fig. 384, 385, 386.**

Proceedings Linnean Society N. S. Wales 1890, p. 38.

♂. Above. Forewing dull bronze brown: cilia grey-brown. Hindwing dull bronze brown: cilia grey-brown.

Beneath. Forewing pale brown: markings typical, indicated only by brown edges: terminal markings absent. Hindwing pale brown: markings typical, brown: discal band entire: terminal markings very obscure.

♀. Above and Beneath as in male: hindwing beneath with an obscure broad subterminal band, whitish.

Loc. Sydney 9 10. Pambula 12. Flinders Is. 11. 42♂ 24♀.

156. **Neolucia serpentata** Herrich-Schaeffer. **Fig. 377, 387, 388.**

Stettiner Entomologische Zeitung 1869, p. 74.

♂. Above. Forewing grey-brown: an obscure central area, reaching base and dorsum, bluish purple: cilia white, at veins broadly brown. Hindwing grey-brown: an obscure central area, reaching base, bluish purple: faint indications of terminal spots in areas 1a and 2, brown edged whitish: vein 2 produced to a very short and broad tail: cilia white, at veins brown.

Beneath. Forewing pale grey-brown: markings typical, broad, pale grey-brown broadly edged white. Hindwing pale grey-brown suffused white: markings typical, but obscured and interrupted, brown: termen with a series of rings, whitish, that in area 2 centred brown and faintly crowned pale yellow.

♀. Above as in male: central areas pale bluish. Beneath as in male.

Loc. Eidsvold 1 2 3. Brisbane 3 4. Warwick 3. Richmond R. 3 5. 11. Inverell 9. Manning R. 3. Sydney 4 10 11. Illawarra 3 4. Blue Mts. 2 12. Moruya 4. Mt. St. Bernard 2. Wandin 2. Gisborne 1. 2 11 12. Castlemaine 2 3 9 11. Birchip 4. Sea Lake. Kerang. Dimboola 11. Adelaide 2. Perth. Kalgoorlie 5. Roebourne. 35♂ 24♀. Toronto 4/17

Foodplant at summit Kosciusko (7300 ft) Leucopogon (G.A.W.) Feb & Mch 1920 (in Mch rare).

Gisborne 14 1 17 Quorn S.A. (Elstn) Nov 1918. Mt Kosciusko (G.A.W.) Feb. 1920

[illegible]

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[illegible]

Richmond R. 1.4.10.11. (CAW 1922)

Urunga (W) Oct 20. Toronto 4/17

157. **Neolucia sulpitius** Miskin.

157a. **N. sulpitius sulpitius** Miskin. **Fig. 360, 361, 362.**

Proceedings Linnean Society N. S. Wales 1890, p. 37.

♂. ABOVE. Forewing brown: termen narrowly dark brown: cilia brown. Hindwing brown: termen narrowly dark brown: vein 2 produced to a blunt tooth: cilia grey-brown.

BENEATH. Forewing brown: markings typical, indicated only by white edges. Hindwing brown: towards dorsum faintly suffused greyish: markings typical, irregular, brown edged dark brown and then whitish: termen with a series of incomplete rings, whitish, that in area 2 centred brown-black and faintly crowned yellow-brown, that at tornus obscurely centred brown-black.

♀. ABOVE as in male: slightly paler. Beneath as in male.

LOC. Brisbane 1 2 3 4 5 6 9 11 12. Burpengary 4. 20♂ 12♀.

157b. **N. sulpitius obscura** nov. **Fig. 363, 364, 365.**

♂. ABOVE. Forewing pale brown: termen narrowly brown: cilia pale brown. Hindwing pale brown: termen narrowly brown, with traces of a spot in area 2, brown edged whitish: vein 2 produced to a blunt tooth: cilia pale brown.

BENEATH. Forewing pale brown: markings typical, pale brown edged brown and then broadly whitish. Hindwing pale brown: a discal suffusion, whitish: markings typical, broad, brown edged whitish: termen with a spot in area 2, black faintly crowned yellow-brown, and a spot in area 1a obscurely black.

♀. ABOVE and BENEATH as in male.

LOC. Cooktown 10 11. Cairns 10. 15♂ 8♀.

Smaller and paler than the previous race, the apex of forewing much broader and the termen of forewing much more convex.

Genus **THECLINESTHES** Rober.

Tijdschrift voor Entomologie 1891, p. 316.

Forewing with vein 11 anastomosed with vein 12 excepting for a short basal portion: termen only slightly shorter than dorsum: costa very feebly arched, and termen almost straight. Hindwing with a filamentous tail to vein 2. Eyes hairy.

TYPE. *Theclinesthes eremicola* Rober, from Alor, Flores.

The butterflies of this genus are very similar to those of *Nacaduba*, but the tail is somewhat stouter. We have two aberrant examples in which vein 11 is free from vein 12 for a short terminal as well as a short basal portion.

158. **Theclinesthes onycha** Hewitson.

158a. **T. onycha onycha** Hewitson.

Illustrations Diurnal Lepidoptera, Lycaenidae, p. 56, pl. 24, fig. 11, 12, 1865.

♂. ABOVE. Forewing silky blue: termen narrowly grey-brown: cilia whitish. Hindwing silky blue: costa broadly and termen narrowly, grey-brown: a subcaudal and a subtornal spot, black, faintly edged whitish: cilia whitish.

BENEATH. Forewing grey: markings typical, grey edged brown and then broadly whitish. Hindwing grey: markings typical, grey edged brown and then broadly white: a subterminal area suffused whitish: termen with a series of rings, whitish, that in area 2, large, centred black and crowned orange, that in area 1a, black.

♀. ABOVE. Forewing pale brown: a central area, reaching base and dorsum, pale blue: cilia whitish. Hindwing pale blue: costa broadly and termen, pale brown: termen with a series of large rings, white, those in areas 1a and 2 centred black: cilia whitish.

BENEATH. Forewing as in male. Hindwing grey suffused whitish: markings as in male.

LOC. Prince of Wales Is. 5 6 7. Banks Is. 2. Claudie R. 1. Kuranda 1 2 4 5. Darwin 8 9 10. 47♂ 52♀. Westwood Q (AWB) 27.3.23. 25.3.2–

The type of *onycha* is a female and the figure is rather poor, but we believe it represents this species and not *T. miskini*. The larvae feed upon *Acacia* while those of *miskini* feed upon *Macrozamia*.

158b. **T. onycha atrosuffusa** Waterhouse. **Fig. 273, 327, 331.**

Proceedings Linnean Society N. S. Wales 1903, p. 241.

♂. Above. Forewing silky blue tinged lilac: termen lined grey-black: cilia whitish. Hindwing silky blue tinged lilac: costa broadly and termen narrowly, grey-black: an obscure subcaudal spot, black: cilia whitish, at veins brown.

Beneath. Forewing grey-brown: markings typical, grey-brown edged brown and then whitish: apex broadly whitish. Hindwing grey-brown suffused white: an obscure central suffusion, brown: markings typical, very obscure, brown faintly edged whitish: subcaudal and subtornal spots, very obscure, brown-black.

♀. Above. Forewing pale brown: a central area, reaching base and dorsum, pale blue: cilia whitish. Hindwing pale blue: costa broadly and termen, pale brown: termen with a series of rings, whitish, those in areas 1a and 2, centred brown-black: cilia whitish.

Beneath. Forewing as in male. Hindwing grey suffused white: markings as in male.

Loc. Sydney 4 8 9 10. Moruya 8. 15♂ 3♀.

T. onycha v. *albocincta* was described from two poor specimens taken at Peak Downs, Queensland: this may prove to be another geographical race.

159. **Theclinesthes miskini** Lucas. **Fig. 328, 329, 330.**

Proceedings Royal Society Queensland 1889, p. 158, fig. 5, 6, 7.

♂. Above. Forewing lilac. termen narrowly brown: cilia whitish. Hindwing lilac: costa broadly and termen, brown: termen with a subcaudal and a subtornal spot, brown-black faintly edged whitish: cilia whitish.

Beneath. Forewing brown: markings typical, brown narrowly edged whitish. Hindwing brown: markings typical, brown faintly edged whitish: termen with a series of faint rings, whitish, that in area 2, centred black and crowned orange, that in area 1a, black.

♀. Above. Forewing pale brown: a central area, reaching base and dorsum, lilac: base blue: cilia whitish. Hindwing lilac: base blue: costa broadly and termen, pale brown: termen with a series of large rings, whitish, those in areas 1a and 2, centred black: cilia whitish.

Beneath as in male.

Loc. Kuranda 1 2 3 11 12. Ingham 5. Mackay 1 2 3 9 12. Rockhampton 11. Eidsvold 12. Brisbane 2 3 4 5 11. Manning R. 3. Sydney 1 2 3 4 9 10. Waroona 2 11. Geraldton 11. Carnarvon. 40♂ 43♀.

160. **Theclinesthes scintillata** Lucas. **Fig. 313, 314, 315**

Proceedings Royal Society Queensland 1889, p. 157, fig. 8, 9, 10.

♂. Above. Forewing purple-brown: termen narrowly brown: cilia grey-brown. Hindwing purple-brown: costa and termen narrowly brown: termen with a subcaudal and a subtornal obscure small spot, brown-black: cilia grey-brown.

Beneath. Forewing brown: apex broadly white: markings typical, rich brown faintly edged white. Hindwing brown: apex broadly suffused white: markings typical, obscure, brown: discal band edged dark brown: subcaudal spot brown-black, faintly and narrowly crowned yellow: subtornal spot, black.

♀. Above. Forewing grey-black: a central area, reaching base and dorsum, pale silvery blue: a small central patch, white: cilia whitish. Hindwing grey-black: a central area, reaching base, pale silvery blue: termen with a series of rings, white, those in areas 1a and 2, centred black: cilia whitish.

Beneath as in male: markings rich brown edged dark brown.

Loc. Prince of Wales Is. 7. Kuranda 2 3 4 5 6 9. Herberton 12. Mackay 8 9. Brisbane 2 5 6 Richmond R. 4. 3.6.10.11. Darwin 9. 30♂ 26♀.

Toronto 12/-

[illegible]

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Subfamily **LUCIINAE.**

Imago. Of small size. Forewing with eleven veins: vein 11 not anastomosed with vein 12: vein 8 absent: vein 6 arising from vein 7 beyond end of cell. Hindwing variable. Eyes smooth.

Range. Confined to Tasmania and the southern half of eastern Australia.

The species of the three genera we place in this subfamily are all of somewhat similar colours. They differ from all other Australian Lycaenids in vein 6 of forewing arising from vein 7 beyond the cell: otherwise they are not closely related. *Lucia* has the delicate build and weak flight of the smaller *Lycaeninae*: *Pseudalmenus* is distinctly and *Paraluia* more remotely related to the *Theclinae*. We suggest that the species of all three genera may be regarded as ancestral forms of probably southern American origin. Our excuse for erecting a subfamily upon one main structural point, and including within it three otherwise divergent genera, is that the elimination of these three aberrant genera is imperative, before a satisfactory subdivision of the remaining genera of the Australian *Lycaenidae* can be attempted.

Key to the Genera of *LUCIINAE.*

A. Hindwing with termen evenly rounded .... *Lucia.*
B. Hindwing with termen produced to a tooth at vein 1a .... *Paralucia.*
C. Hindwing with an anal lobe, and with a tail to vein 2 .... *Pseudalmenus.*

Genus **LUCIA** Swainson.

Zoological Illustrations, Second Series, ii, pl. 135, 1832.

Forewing with vein 12 reaching costa about end of cell: vein 11 free from vein 12: vein 10 from subcostal well before end of cell: vein 7 reaching costa just before apex: vein 6 from vein 7 well beyond end of cell. Hindwing with termen evenly rounded. Eyes smooth.

Type. *Lucia lucanus* Fabricius.

The one species of this genus has a very low and weak flight, suggestive of that of the butterflies of the genus *Neolucia* of the *Lycaeninae.*

161. **Lucia lucanus** Fabricius. **Fig. 246, 247, 248.**

Entomologia Systematica, iii, p. 322, 1793.

♂. Above. Forewing dull brown: a broad central area, including the greater portion of cell and reaching dorsum, coppery orange: a narrow bar at end of cell, brown: cilia white, at veins brown. Hindwing dull brown: sometimes a very faint central suffusion, coppery: cilia white, at veins brown.

Beneath. Forewing pale brown suffused whitish: a central area, pale orange: two bars across cell, a bar at end of cell, and a dot in area 1a below middle of cell, brown edged whitish: a series of small discal spots from costa to area 2, brown edged whitish: a series of faint minute subterminal spots, pale brown. Hindwing brown suffused whitish: a curved series of small irregular discal spots, brown: a basal and a subterminal series of faint minute spots, pale brown.

♀. Above. Forewing dull brown: an ill-defined variable central patch, dull coppery orange: a spot in cell and a bar at end of cell, dark brown: cilia white, at veins brown. Hindwing dull brown: cilia white, at veins brown.

Beneath as in male: brown subterminal spots larger and clearer.

Loc. Mackay. Rockhampton 11 12. Eidsvold 3. Brisbane 1 6 7 8 12. Richmond R. 1 2.3.9. Manning R. 3. Sydney 1 2 10. Illawarra 4 8. Blue Mts. 3. Melbourne 11 12. Gisborne 2 3. Castlemaine 2 3 4 10 11 12. Birchip. Kerang. Murtoa. Dimboola. 37♂ 39♀. Port Macquarie 2/1918. Toronto (W.D.F.)

Donovan's figure of *lucanus,* if it be really drawn from this species, is a very poor one, hence there is still some little uncertainty as to its identification. Swainson, when defining the genus, figured this species under the name of *limbaria,* adding the name *lucanus* as a doubtful synonym.

The butterfly is irregular in its appearance: in some seasons only single examples are to be met with, but at other times it is very abundant.

Genus **PARALUCIA** Waterhouse & Turner.

Proceedings Linnean Society N. S. Wales 1904, p. 802.

Forewing with vein 12 reaching costa before end of cell: vein 11 free from vein 12: vein 10 from subcostal well before end of cell: vein 7 reaching costa just before apex: vein 6 from vein 7 beyond end of cell. Hindwing produced to a blunt tooth at vein 1a (much more pronounced in the male than in the female). Eyes smooth.

TYPE. *Paralucia pyrodiscus* Rosenstock.

The two species of this genus are very similar, and are both very inconspicuous upon the wing. Their quick jerky flight is suggestive of that of many of the Hesperids. Both are usually taken flying round the flower sprays of *Bursaria spinosa*.

162. **Paralucia pyrodiscus** Rosenstock. **Fig. 252, 253.**

Annals Magazine Natural History 1885, p. 377.

♂. ABOVE. Forewing dark brown: a broad central area, including lower half of cell and reaching dorsum, coppery: a small dot, nearly hidden by the dark margin, at end of cell, dark brown: cilia brown with tips whitish. Hindwing dark brown: terminal half variably and faintly coppery: a series of obscure lunular subterminal spots, dark brown: termen narrowly dark brown: cilia brown with tips whitish.

BENEATH. Forewing pale brown often faintly suffused purplish: two spots in cell and two below cell, a spot at end of cell, and a band of discal spots, pale brown narrowly edged dark brown. Hindwing pale brown often faintly suffused purplish: a spot in cell, a postcellular, a discal and a subterminal, curved series of irregular spots, pale brown narrowly edged dark brown: a terminal line, brown.

♀. ABOVE. Forewing as in male: termen strongly convex: coppery area slightly paler and more ovoid. Hindwing as in male: coppery area more pronounced, but variable: lunular subterminal spots larger and clearer.

BENEATH as in male but shading to yellow-brown: edges of spots fainter.

LOC. Gayndah. Eidsvold 11. Brisbane. Blackbutt 11. Killarney 11. Manning R. 3. Sydney 1 2 3 4 11 12. Blue Mts. 1 12. Picton 1. Castlemaine 3 11 12. Dimboola 11. 57♂ 39♀.

163. **Paralucia aurifer** Blanchard. **Fig. 249, 250, 251.**

Voyage au Pole Sud, t. 3, fig. 13, 14, 1853.

♂. ABOVE. Forewing brown-black: a broad triangular area below cell and seldom quite reaching dorsum, rich coppery: cilia brown with tips between veins whitish. Hindwing brown-black: a central, sometimes triangular, area below cell, rich coppery: an interrupted narrow subterminal line, metallic blue: cilia brown with tips between veins whitish.

BENEATH. Forewing pale brown, sometimes faintly suffused whitish: sometimes an ill-defined patch below cell, yellow-brown: two bars across cell, a spot below middle of cell, a spot at end of cell, and a band of discal spots, pale brown narrowly edged brown: a subterminal and a terminal interrupted broad line, brown. Hindwing pale brown: a series of basal and another of subterminal spots, pale brown narrowly edged brown: a series of irregular ill-defined discal spots, brown sometimes suffused purplish.

♀. ABOVE. Forewing as in male: termen strongly convex: a coppery area more ovoid. Hindwing as in male: coppery area irregular.

BENEATH as in male: yellow-brown patch of forewing larger and always present: discal band of hindwing fainter.

LOC. Blackbutt 11. Ebor 1 12. Manning R. 3. Sydney 1 2 3 4 9 10 11 12. Illawarra 2 12. Blue Mts. 9. Picton 1. Pambula 12. Wandin 11. Gisborne 11 12. Patersonia 1. Hobart 2. 45♂ 41♀.
Moe V. (ccc) Jan 1919. Toronto NSW. 2.4.1920.

The subterminal metallic blue line of hindwing above at once separates this species from *pyrodiscus*.

Narrabeen N.S.W. Dec 1921 (GAW)

Genus **PSEUDALMENUS** Druce.

Proceedings Zoological Society London 1902, ii, p. 116.

Forewing with vein 12 reaching costa just beyond end of cell: vein 11 free from vein 12: vein 10 from subcostal well before end of cell: vein 7 reaching termen just beyond apex: vein 6 from vein 7 well beyond end of cell. Hindwing with a well developed anal lobe, and with a filamentous tail to vein 2. Eyes smooth.

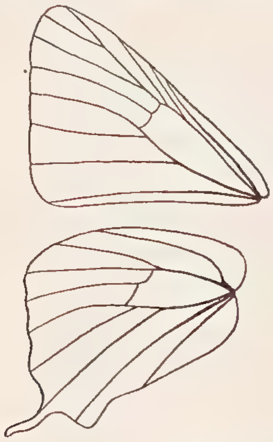

Fig. W. Wing venation of *Pseudalmenus zephyrus* (enlarged).

Type. *Pseudalmenus chlorinda* Blanchard.

The only other Australian Lycaenid, in which vein 7 of forewing reaches termen, is the aberrant *Liphyra brassolis*. The larvae of *Pseudalmenus* are flattened and rugged, and the pupae are short and stout and attached by the tail and a central silken girdle. They shelter together in crevices of the trunk of the foodtree (*Acacia melanoxylon*), and are always attended by a small black ant.

164. **Pseudalmenus chlorinda** Blanchard.

This interesting species has developed local races, which chiefly differ in an increase of the orange discal band above in northern localities, and an increase of the width of the black bands beneath in southern localities.

164a. **P. chlorinda chlorinda** Blanchard. **Fig. 863, 864.**

Voyage au Pole Sud, pl. 3, fig. 15, 16, 17, 18, ante 1853.

♂. Above. Forewing brown-black: a broad bar at end of cell, dull black: rarely faint orange scales in bases of areas 2, 3, 4 and 5: cilia brown with tips whitish. Hindwing brown-black: rarely a small irregular patch beyond cell, orange: a narrow subterminal band from vein 5 to dorsum, red: tail brown-black: cilia whitish.

Beneath. Forewing stone grey: a broad bar at end of cell, black: a broad discal line from vein 11 to vein 1a, black: a terminal line, black. Hindwing stone grey: a bar at end of cell, extending to vein 8, black: usually a discal band from vein 1a to vein 8, black: a narrow irregular subterminal band, red, outwardly edged black (broader towards apex): two spots near tornus, and a terminal line diminishing to vein 6, black.

♀. Above. Forewing brown-black: a broad discal band from vein 10 to vein 1a, orange, rarely just enclosing a broad bar at end of cell, black: cilia brown-black with tips whitish. Hindwing as in male: subterminal red band broader.

Beneath as in male.

Loc. Launceston 10 12. Hobart. 9♂ 2♀.

The majority of the males from Tasmania agree with the figures of *chlorinda* in the almost total absence of discal orange band above, and the females agree in the orange band of forewing not surround- the black bar at end of cell.

164b. **P. chlorinda zephyrus** nov. **Fig. 436, 437, 438.**

♂. Above. Forewing dull black: a discal band from vein 10 to vein 1a (obscure in base of area 3) orange, with veins and a broad bar at end of cell, black: cilia brown-black with tips whitish. Hindwing dull black: an irregular variable patch beyond cell, orange, sometimes tinged red: a subterminal band from vein 6 to dorsum, red, with two or three spots on outer edge at tornus, black: tail dull black: cilia whitish.

Beneath. Forewing stone grey: a broad bar at end of cell, black: a broad discal line from vein 11, vein 10 or vein 7 to vein 1a, black: a broad terminal line, black. Hindwing stone grey: a bar at end of cell, often extending to vein 8, black: a discal spot in area 1a, rarely reaching as an interrupted discal line to vein 8, black: a narrow irregular subterminal band, red, outwardly edged with an interrupted line, black: two spots near tornus, and a terminal line diminishing to vein 6, black.

♀. Above. Forewing dull black: a broad discal band from vein 11 to vein 1a, orange and usually just enclosing a broad bar at end of cell, black: cilia brown-black with tips whitish. Hindwing as in male: subterminal red band slightly broader.

Beneath as in male: discal black line of hindwing broader.

Loc. Narracan 12. Wandin 10. Healesville 9 10 12. Gisborne 8 9 10 11. Ballan 10. 35♂ 33♀.

This subspecies is variable in the extent of the orange markings above: in a few of the males these markings are almost absent, and in many examples they are smaller than in the figure. If the specimen (a female) figured as *myrsilus* had not been recorded as from Tasmania, we would have used that name, for Victorian specimens agree with that figure much more closely than do Tasmanian examples.

164c. **P. chlorinda chloris** nov. **Fig. 870, 871.**

♂. Above. Forewing dull black: a discal band from vein 10 to vein 1a (somewhat obscure in base of area 3), orange, with veins and a broad bar at end of cell, dull black: cilia brown-black with tips whitish. Hindwing dull black: a large patch beyond end of cell, orange: a broad subterminal band from vein 6 to dorsum, red, with two or three spots on outer edge at tornus, black: tail dull black: cilia whitish.

Beneath. Forewing silky white: a broad bar at end of cell, black: a broad discal line from vein 11 to vein 1a, black: a broad terminal line, black. Hindwing silky white: a bar at end of cell, extending to vein 8, black: a discal spot in area 1a, black: a narrow irregular subterminal band, red, outwardly edged by an interrupted line, black: two spots near tornus, and a terminal line diminishing to vein 6, black.

♀. Above. Forewing dull black: a very broad discal band from vein 11 to dorsum, orange, enclosing a bar at end of cell, black: cilia black with tips whitish. Hindwing dull black: a large patch in end of cell and beyond, orange: a bar at end of cell, black: a very broad subterminal band, from vein 7 to dorsum, red, with two spots on outer edge at tornus, black: tail dull black: cilia whitish.

Beneath as in male.

Loc. Blue Mts. 10. 3♂ 1♀.

This race is much larger than typical *chlorinda*, and the orange and red markings above are more extensive.

Subfamily **OGYRINAE.**

Ovum. Spherical: sometimes much flattened at base and apex: sometimes smooth, sometimes densely pitted.

Larva. Flattened: sometimes smooth, sometimes with scattered bristles. Feeds by night upon various species of the parasitic *Loranthus*, and shelters during daylight under loose bark, in crevices of the trunk of the host tree, or under the surface of the earth in ants' nests. All the known larvae, excepting only those of *O. olane*, have secretory dorsal glands upon the posterior segments: and the larva of each species is attended by a different species of ant.

Pupa. Short, hard and smooth: only slightly flattened. Found in the same positions as the sheltering larvae: attached by the tail and a central girdle.

Imago. Of moderate size and robust build. Eyes smooth. Forewing with eleven veins: vein 12 reaching costa before end of cell: vein 11 not anastomosed with vein 12: vein 8 absent: vein 7 reaching costa just before apex: vein 5 slightly nearer to vein 6 than to vein 4. Hindwing with termen dentate, and sometimes strongly produced at vein 2: anal lobe present but imperfectly developed. Male without a sexmark. Sexes often markedly dimorphic.

Range. Confined to Australia, with the exception of one species (*O. meeki*) in New Guinea.

Moc V. 10-11.

[illegible] agree with our figure much more closely [illegible]

Genus **OGYRIS** Westwood.

Genera Diurnal Lepidoptera, ii, p. 472, 1852: Bethune-Baker, Transactions Entomological Society London 1905, p. 269-292.

The subfamily consists of a single genus only, so it is unnecessary to repeat the structural characters. The butterflies are all robust strong-flying insects, and many of them are brilliantly coloured. They have the appearance of large *Lycaeninae,* and the venation is not far removed from typical *Lycaeninae,* but is often variable. In the one species we have found vein 6 of the forewing usually arising from cell, occasionally from the same point as vein 7, and in a single aberrant example from vein 7 just beyond cell.

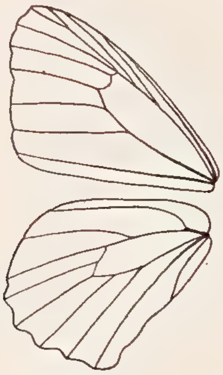

Fig. X. Wing venation of *Ogyris abrota,* male (enlarged).

Type. *Ogyris abrota* Hewitson.

Foodplant. *Loranthus.*

It is significant of the strong general resemblance of the butterflies of this genus, that since it was first established by Westwood no confusion in regard to it has arisen: no species described as an *Ogyris* has been removed from the genus, and no species of *Ogyris* has been described under another generic name. Interesting particulars and illustrations of the life histories of *O. abrota, O. olane,* and *O. amaryllis meridionalis,* are given by Anderson and Spry in "Victorian Butterflies," p. 101-110.

The markings of the undersurface of the butterflies appear at first sight very complicated and confused, but careful examination reveals a certain well defined pattern common to all the species. The spots and bars are sometimes blurred and confused, and sometimes confluent: but they always occupy certain defined positions in relation to each other and to the wing areas. The following tabulation of these markings gives a general pattern scheme applicable to all the known species: this is for use in conjunction with the figures, in order that a great deal of unnecessary repetition of detail may be avoided in the later specific descriptions.

♂ ♀. Beneath. Forewing some shade of brown, with spots and bars usually a darker shade of brown, but sometimes quite merged in the ground colour: a spot in base of cell, often outwardly edged whitish: a bar across cell at onethird and another at twothirds, edged whitish or metallic: a broad bar at end of cell and often extending to the bases of areas 3 and 2: an irregular, variable, often incomplete, discal band. Hindwing some shade of brown, with spots of irregular shape of the same or another shade, each narrowly outlined darker: a small spot in base of cell: a bar across cell at onethird and another at twothirds: a broad bar at end of cell: a curved series of spots in areas 1b to 7, forming an irregular interrupted discal band: two additional spots in area 1a, two more in area 7, and a fifth on costa at base: sometimes patches of a darker shade at the bases of areas 2, 3 and 6, these often coalescent with bar at end of cell.

165. **Ogyris aenone** Waterhouse. **Fig. 411, 414, 434, 852, 853.**

Proceedings Linnean Society N. S. Wales 1902, p. 339, pl. 14, fig. 9: *id*, 1905, p. 246.

♂. ABOVE. Forewing metallic silvery blue: costa, apex and termen, broadly black: a narrow bar at end of cell, black: a small obscure subcostal patch in apex, metallic blue: cilia black with tips whitish. Hindwing metallic silvery blue: costa broadly and termen narrowly, black: cilia black with tips whitish.

BENEATH. Forewing grey-brown: a large obscure patch towards tornus, paler: cell bars edged brilliant metallic blue: bar at end of cell continued towards dorsum at twofifths by large well defined spots in areas 3 and 2: spots of discal band irregular, smallest towards costa. Hindwing grey-brown: markings typical, brown, small and very much obscured.

♀. ABOVE as in male: slightly paler: black margins slightly broader: bar at end of cell broader: a subcostal patch in apex of forewing, whitish.

BENEATH as in male: spots larger: cell of forewing between cell bars, pale red.

LOC. Thursday Is. 3. Cooktown 4 10. Cairns 1. Kuranda. 5♂ 4♀.

166. **Ogyris oroetes** Hewitson. **Fig. 412, 413, 431.**

Catalogue Lycaenidae British Museum, p. 3, pl. 1, fig. 12, 13, 1862.

♂. ABOVE. Forewing metallic lilac-blue: apex narrowly, and termen very narrowly, brown: cilia brown with tips whitish. Hindwing metallic lilac-blue: costa and termen very narrowly brown: cilia brown with tips whitish.

BENEATH. Forewing grey-brown: dorsum shaded paler: cell bars brown edged whitish: discal band with spots in line to vein 2, brown. Hindwing grey-brown: markings only indicated by their darker brown margins.

♀. ABOVE. Forewing metallic blue: costa, apex and termen, broadly brown: bar at end of cell, and veins beyond cell, brown: costa near apex splashed with white: cilia brown with tips whitish. Hindwing metallic blue faintly tinged lilac: costa broadly, and termen, brown: cilia brown with tips whitish.

BENEATH as in male: cell bars of forewing slightly darker.

LOC. Townsville 1 3 4 6 11. Mackay. Derby. 21♂ 17♀. Scone NSW. Millmerran ♀. 4.1.29. 17.3.29

Hewitson's figure of the type female shows metallic blue edges to the cell spots of the forewing beneath: this may well be so, but our examples are nearly all bred specimens and none of them show these blue scales. We have seen two specimens only from Derby and they are both females.

167. **Ogyris amaryllis** Hewitson.

This is the most widely distributed species of the genus. It is found throughout the continent and is one of the few characteristic butterflies of the dry interior. The typical race is found in but a small district and is peculiar in differing considerably from the races to the north and to the south, while they approach each other closely. The name *oroetes* has been often wrongly applied to the race *amaryllis meridionalis.*

167a. **Ogyris amaryllis hewitsoni** Waterhouse. **Fig. 409, 410, 429, 430.**

Proceedings Linnean Society N. S. Wales 1902, p. 338, pl. XIV, fig. 5, 6.

♂. ABOVE. Forewing bright metallic blue: apex and termen narrowly black: cilia black with tips whitish. Hindwing bright metallic blue: costa, and termen very narrowly, black: cilia black with tips whitish.

BENEATH. Forewing grey: cell bars brown edged metallic blue and whitish: discal band, with spot in area 3 moved nearer base, brown. Hindwing grey: termen, except towards apex, rich brown: markings typical, pale brown margined brown.

♀. ABOVE. Forewing metallic blue: costa, apex and termen, broadly black: a broad bar at end of cell, and veins beyond cell, black: costa near apex splashed with white: cilia black with tips whitish. Hindwing metallic blue: costa broadly and termen, black: cilia black with tips whitish.

BENEATH. Forewing as in male: cell between bars, scarlet. Hindwing as in male: a central suffusion, rich brown.

LOC. Cairns. Townsville 1 2 5 6 11 12. Mackay 3 4 5. 20♂ 19♀.

167b. **O. amaryllis amaryllis** Hewitson. **Fig. 415, 416, 432, 433.**

Catalogue Lycaenidae British Museum, p. 3, pl. 1, fig. 5, 6, 1862.

♂. Above. Forewing rich dark metallic blue: apex and termen broadly black: cilia black with tips faintly whitish. Hindwing rich dark metallic blue: costa, and termen narrowly, black: cilia black with tips whitish.

Beneath. Forewing brown-black: termen grey-brown: cell bars black edged whitish and faintly metallic blue: discal band broad, irregular, brown-black. Hindwing grey-brown: markings typical, brown margined brown-black: termen, except towards apex, rich brown: a central suffusion, rich brown.

♀. Above. Forewing rich dark metallic blue: costa, apex and termen, very broadly black: a broad bar at end of cell, often merged in dark costa, black: veins beyond cell, black: costa near apex faintly splashed with white: cilia black with tips whitish. Hindwing rich dark metallic blue: costa and termen broadly black: veins black: cilia black with tips whitish.

Beneath. Forewing as in male: cell between bars, scarlet. Hindwing as in male.

Loc. Brisbane 1 2 3 4 5 9 10. Richmond R. 5 9 10 11. 30♂ 30♀.

167c. **O. amaryllis meridionalis** Bethune-Baker.

Transactions Entomological Society London 1905, p. 286.

♂. Above. Forewing metallic blue: apex and termen narrowly black: cilia black with tips whitish. Hindwing metallic blue: costa, and termen very narrowly, black: cilia black with tips whitish.

Beneath. Forewing dark brown: apex and termen grey-brown: cell bars black edged metallic blue and whitish: discal band, with spot in area 3 moved nearer base, dark brown. Hindwing grey-brown: markings typical, distinct, brown margined dark brown.

♀. Above. Forewing metallic blue tinged purple: costa, apex and termen, broadly black: a broad bar at end of cell, and veins beyond cell, black: costa near apex splashed with white: cilia black with tips whitish. Hindwing metallic blue tinged purple: costa broadly and termen, black: cilia black with tips whitish.

Beneath. Forewing as in male: cell between bars, scarlet. Hindwing as in male: termen, except towards apex, rich brown: a central suffusion, rich brown.

Loc. Emerald 10. Bourke. Birchip 1 3 10 11 12. Sea Lake. Kewell 1 2 3 4 5 9 10 11 12. Dimboola 11 12. Owen. Moonta. Menzies. Geraldton. Carnarvon. 30♂ 11♀.

The *Ogyris* found in the Macdonnell Ranges, Central Australia, is probably this race.

168. **Ogyris iphis** nov.

This interesting new species is allied to *O. ianthis,* which it resembles closely beneath. We anticipate that it will eventually be connected with *ianthis* by the discovery of intermediate subspecies.

168a. **Ogyris iphis iphis** nov. **Fig. 394, 394a, 839, 845.**

♂. Above. Forewing metallic blue faintly tinged purple: costa and termen narrowly, and apex, brown-black: cilia brown-black. Hindwing metallic blue faintly tinged purple: costa and termen narrowly brown-black: cilia brown-black with tips whitish.

Beneath. Forewing brown: central and tornal area paler: apex faintly suffused purplish: cell bars black, narrowly edged metallic blue: spots of discal band small, black, upper ones faintly edged metallic blue. Hindwing purplish brown: markings typical, small, faint, brown.

♀. Above. Forewing metallic blue: costa and apex very broadly, and termen broadly, brown-black: a subcostal patch near apex, orange: a bar at end of cell, sometimes merged in the dark costa, brown-black: cilia brown-black. Hindwing metallic blue: costa broadly and termen, brown-black: cilia brown-black with tips whitish.

Beneath. Forewing rich brown: dorsum paler: a patch below end of cell, pale orange: cell bars as in male but broader: spots of discal band as in male but much larger. Hindwing rich brown: basal fourth brown, and separated by a narrow irregular line, silvery white: markings, except in base, very obscure: an irregular narrow discal line from dorsum at half to below end of cell, silvery white.

Loc. Kuranda 1 2 3 4 5 8 9. 7♂ 6♀.

168b. **O. iphis doddi** nov. **Fig. 838, 844.**

♂. Above. Forewing metallic blue: costa, apex and termen, very narrowly brown-black: cilia brown-black. Hindwing metallic blue: costa and termen very narrowly brown-black: cilia brown-black with tips whitish.

Beneath. Forewing brown: central and tornal area, paler: apex faintly purplish: cell bars black edged metallic blue: spots of discal band small, black narrowly edged metallic blue. Hindwing purplish brown: markings typical, obscure, brown.

♀. Above. Forewing metallic blue: costa and apex broadly, and termen, brown-black: a subcostal patch near apex, orange: a bar at end of cell, brown-black: cilia brown-black. Hindwing metallic blue: costa broadly and termen narrowly, brown-black: cilia brown-black with tips whitish.

Beneath. Forewing brown: dorsum paler: a large patch below end of cell, pale orange: cell bars as in male but broader: spots of discal band as in male but larger. Hindwing rich brown: basal fourth brown, and separated by a narrow interrupted line, silvery white: markings except in base, obscure, those in base and towards dorsum at half, narrowly margined silvery white.

Loc. Darwin 9 11. 2♂ 2♀.

Distinguished from the typical race by the much narrower dark margins above.

169. **Ogyris ianthis** Waterhouse. **Fig. 395, 417, 422, 424, 840, 846.**

Proceedings Linnean Society N. S. Wales 1900, p. 52, pl. 1, fig. 1, 2, 3, 4.

♂. Above. Forewing metallic greenish blue: costa broadly, apex and termen very broadly, brown-black: cilia brown-black. Hindwing metallic greenish blue: costa broadly, and termen, brown-black: cilia brown-black with tips paler.

Beneath. Forewing brown: central and tornal area slightly paler: apex very faintly purplish: cell spot in base often absent: cell bars dark brown faintly edged metallic blue: spots of discal band small, faint, brown. Hindwing purplish brown: markings typical, small, and very obscure.

♀. Above. Forewing orange: costa broadly, and apex, termen and tornus very broadly, brown-black: sometimes faint traces of a small subcostal patch near apex, orange: a bar at end of cell, and traces of a cell bar at twothirds, brown-black: cilia brown-black. Hindwing brown-black: a variable central area, faintly orange: cilia brown with tips paler.

Beneath. Forewing as above: cell bars darker, and faintly edged metallic blue: sometimes a spot in base of cell, brown-black: spots of discal band obscured in dark apex. Hindwing rich brown: basal fourth brown, and separated by a narrow irregular line, silvery white: markings, except in base, very obscure: traces of irregular discal lines in dorsum at half, silvery white.

Loc. Sydney 2 3 10 11 12. 32♂ 30♀.

170. **Ogyris abrota** Westwood. **Fig. 389, 390, 418, 419.**

Genera Diurnal Lepidoptera, p. 472, t. 75, fig. 8, 1852.

♂. Above. Forewing rich dark purple: costa, apex and termen, broadly rich black: cilia black. Hindwing rich dark purple: costa and termen broadly rich black: cilia black with tips faintly whitish.

Beneath. Forewing black: dorsum paler: apex and termen whitish: cell bars only indicated by whitish edges: discal band absent. Hindwing brown suffused whitish: basal fifth rich brown, and separated by a broad line, black: termen near tornus, rich brown: markings typical, obscure, rich brown margined black.

♀. Above. Forewing brown-black: base paler: a large ovoid central area, entering cell and reaching vein 1a, cream: costa near apex splashed with white: cilia brown-black. Hindwing brown-black: cilia brown-black with tips whitish.

Beneath. Forewing dull black: apex and termen brown: apex suffused whitish: central cream area as above. Hindwing as in male: markings larger and more distinct.

Loc. Brisbane. Sydney 1 9 10 12. Illawarra 1 2 3 4 10. Sale 3 4. Wandin. Oakleigh 2 3 11.
29♂ 28♀. Sorrento 2.4.20.

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171. **Ogyris barnardi** Miskin. **Fig. 393, 396, 397.**

Proceedings Linnean Society N. S. Wales 1890, p. 27.

♂. Above. Forewing dull purple: apex and termen narrowly black: cilia brown-black. Hindwing dull purple: costa and termen narrowly black: cilia brown-black.

Beneath. Forewing dull black: base and dorsum paler: apex suffused whitish: cell bars only indicated by bluish white edges. Hindwing brown suffused greyish: markings typical, only indicated by dark brown margins.

♀. Above. Forewing dull bluish purple: costa, apex broadly, and termen, brown-black: costa near apex very faintly splashed with white: cilia brown-black. Hindwing dull bluish purple: costa broadly, and termen, brown-black: cilia brown-black with tips faintly whitish.

Beneath as in male: an obscure central suffusion, dark brown.

Loc. Dawson R. (type). Emerald 9 10. Stradbroke Is. 12. 9♂ 10♀.

172. **Ogyris olane** Hewitson. **Fig. 391, 392, 421, 423.**

Catalogue Lycaenidae British Museum, p. 2, pl. 1, fig. 10, 11, 1862.

♂. Above. Forewing brown-black: apex broadly rich brown: base of areas 1a and 2, dull purple: costa near apex splashed with white: cilia brown-black with tips whitish. Hindwing rich brown: central area, extending to base, dull purple: cilia brown-black with tips whitish.

Beneath. Forewing black: dorsum dull black: apex broadly suffused whitish: cell bars only indicated by metallic blue edges. Hindwing black suffused whitish: markings only indicated by black margins.

♀. Above. Forewing brown-black: base, apex and termen, broadly rich brown: base of areas 1a and 2, and lower portion of cell, bluish purple: costa near apex splashed with white: cilia brown-black with tips whitish. Hindwing as in male.

Beneath as in male: hindwing with an obscure central suffusion, dark brown.

Loc. Brisbane. Blue Mts. 1 2. Wandin 2. Oakleigh 2 5 11. Gisborne 1 2 3 11 12. Castlemaine 3. Dimboola 12. Adelaide 11. Blackwood 11. 27♂ 26♀.

173. **Ogyris zozine** Hewitson.

This largest species of the genus is the only one with a dimorphic female, and its wide range has developed distinct geographical races showing constant colour variations especially pronounced in the female.

Hewitson's initial error of describing the male and the female as two distinct species led to some confusion, and this has been intensified by Bethune-Baker in Transactions Entomological Society London 1905, whose material was evidently quite insufficient for a proper appreciation of the task. He considered *O. zozine* as occurring from Northern Queensland, through N. S. Wales to Victoria, with local races at Duaringa and Brisbane, and he applied the name *genoveva* to the usual blue or green form of the female, and the name *zozine* to the very much rarer purple form of the female.

Careful examination of series from many localities provides us with the following constant characters. Northern males are much duller in colour than southern ones: northern females are confined to the blue and the rarer purple forms: females from southern Queensland have the blue of the usual form tinged greenish, and the purple of the rarer form darker: females from southern N. S. Wales and Victoria are greenish instead of blue, and no second purple form has yet been taken. The cream coloured patch, of the forewing of female above, gradually increases in size as southern latitudes are reached: at Darwin and Cooktown this patch is confined between veins 3 and 6: at Brisbane it extends from before vein 3 to beyond vein 6: in Victoria it reaches vein 2 and vein 9.

The original descriptions and plates provide some evidence that the type examples, like many of Hewitson's Lycaenids, came from Moreton Bay (Brisbane). The type male is purple with distinct black margins. The type female (Hewitson's *Ogyris genoveva*) is described as blue but figured as green: it is an example of smaller than average size, but it has the cream patch of forewing above extending from before vein 3 to beyond vein 6.

We therefore restrict the name *zozine* to the race with dimorphic female found in southern Queensland and northern N. S. Wales, and we sink *genoveva* Hewitson and *zozine magna* Bethune-Baker as direct synonyms: while *zozine duaringae* Bethune-Baker we do not consider sufficiently distinct to merit even a varietal name. This makes necessary new names for the race, with dull purple male and both blue and purple females, occurring from Mackay to Cooktown and Darwin: and for the race with bright purple male and distinctly green female found in southern N. S. Wales and Victoria.

173a. **O. zozine typhon** nov. **Fig. 403, 425.**

♂. ABOVE. Forewing dull purple: apex and termen brown: costa near apex splashed with white: cilia brown with tips whitish. Hindwing dull purple: costa broadly and termen narrowly, brown: cilia brown with tips whitish.

BENEATH. Forewing brown: dorsum pale brown: apex suffused whitish: a patch at end of cell, brown-black: cell bars only indicated by whitish and metallic blue edges. Hindwing brown suffused whitish: markings somewhat darker and margined dark brown.

♀. ABOVE. Forewing black: basal third, not reaching costa, metallic blue or dull metallic blue: a discal patch between vein 3 and vein 6, cream: costa near apex splashed with white: cilia black with tips whitish. Hindwing black: a central area, extending towards tornus, metallic blue or dull metallic blue: cilia black with tips whitish.

BENEATH. Forewing as in male: discal cream patch as above but extended below vein 3 and sometimes reaching vein 10. Hindwing brown suffused whitish: basal fourth pale brown: a central and a subterminal suffusion, brown: markings brown margined dark brown.

LOC. Cooktown 10 11. Kuranda 5. Cairns 1 2. Ingham 9. Townsville 1 2 6 7 8 11. Mackay 12. Fortescue R. Darwin 1 10 11 12. 20♂ 14♀.

In some examples the pale discal patch of forewing above in female is reduced, and reaches neither vein 3 nor vein 6. For the purple form of the female, corresponding with the *zenobia* form of the typical race, we propose

173aa. **O. zozine typhon**, ♀ **f. iberia** nov. **Fig. 420**

♀. ABOVE as in *zozine typhon* female, but with the basal areas dark purple instead of blue.

BENEATH as in *zozine typhon* female.

LOC. Cairns 1. Townsville 6 7 8 11. 5♀.

173b. **O. zozine zozine** Hewitson. **Fig. 398, 407.**

Exotic Butterflies I, Ogyris, 1, fig. 3, 4, 1853: *Ogyris genoveva*, *l. c.* fig. 5, 6, 1853.

♂. ABOVE. Forewing rich purple: apex and termen brown-black: costa near apex splashed with white: cilia brown-black with tips whitish. Hindwing rich purple: costa broadly and termen narrowly, brown-black: cilia brown-black with tips whitish.

BENEATH. Forewing black: dorsum dull black: apex suffused whitish: cell bars only indicated by metallic blue edges. Hindwing black suffused grey: markings darker and margined black.

♀. ABOVE. Forewing black: basal third, not reaching costa, metallic blue tinged greenish: a discal patch from before vein 3 to beyond vein 6, cream: costa near apex splashed with white: cilia black with tips whitish. Hindwing black: a central area, extending towards tornus, metallic blue tinged greenish: cilia black with tips whitish.

BENEATH. Forewing as in male: discal cream patch as above but reaching vein 2 and vein 10. Hindwing black suffused whitish: basal fourth brown: a central and a subterminal suffusion, rich brown: markings brown margined black.

LOC. Duaringa. Brisbane 12. Richmond R. 5 9 11 12. 7♂ 6♀.

This race agrees best with Hewitson's figures and descriptions. For the much rarer purple form of the female we propose

173ba. **O. zozine zozine**, ♀ **f. zenobia** nov.

♀. ABOVE as in *zozine zozine* female, but with the basal areas rich purple instead of blue tinged greenish.

BENEATH as in *zozine zozine* female.

LOC. Brisbane. Richmond R. 5 11. 3♀.

1. 11 10.

MILMERRAN Q. 1.2.

[illegible]

[illegible] Fig. [illegible]

[illegible]

[illegible] sp. nov. Fig. [illegible]

[illegible]

[illegible]

[illegible] towards [illegible]

[illegible] vertical and a [illegible]

[illegible]

[illegible]

[illegible]

173c. O. zozine araxes nov. Fig. 428.

♂. Above. Forewing bright purple: apex and termen, black: costa near apex splashed with white: cilia black with tips whitish. Hindwing bright purple: costa broadly and termen narrowly, black: cilia black with tips whitish.

Beneath. Forewing black: dorsum dull black: apex suffused whitish: cell bars only indicated by broad metallic blue edges. Hindwing black suffused grey: markings darker and margined black.

♀. Above. Forewing black: basal fourth, not reaching costa, metallic green: a discal patch from vein 2 to vein 9, cream: costa near apex splashed with white: cilia black with tips whitish. Hindwing black: a central area, extending towards tornus, metallic green: cilia black with tips whitish.

Beneath. Forewing as in male: discal cream patch as above but reaching vein 10. Hindwing black suffused whitish: basal fourth brown: a central and a subterminal suffusion, rich brown: markings brown margined black.

Loc. Sydney 1 2 10. Illawarra 2 3 9 10 11 12. Dimboola (type) 1 11 12. 30♂ 16♀.

The female of this race, so far as is known, is not dimorphic. Sydney examples are not sufficiently distinct to be separated as another geographical race.

174. Ogyris otanes Felder. Fig. 404, 408, 426, 427.

[illegible]

Reise Novara Lepidoptera, p. 217, pl. 28, fig. 1, 2, 3, 1865.

♂. Above. Forewing dull purple-brown: costa and termen brown-black: cilia brown-black with tips faintly whitish. Hindwing dull purple-brown: costa broadly, and termen, brown-black: cilia brown-black with tips faintly whitish.

Beneath. Forewing grey-brown: a patch at end of cell, brown-black: edges of cell bars, bluish white: a narrow, evenly curved, discal band, brown. Hindwing grey-brown: markings very obscure, brown with margins darker.

♀. Above. Forewing brown: basal third, not reaching costa, dull bluish purple: a small discal patch from before vein 4 to vein 6, cream: cilia brown-black with tips faintly whitish. Hindwing brown: a central area, dull bluish purple: cilia brown-black with tips faintly whitish.

Beneath. Forewing as in male: discal patch as above, but reaching from vein 3 to beyond vein 6. Hindwing as in male: markings not quite so obscure.

Loc. Kangaroo Is. 11. Moonta. Stirling Ranges 10. 11♂ 5♀. Kingscote SA. 26.11.10 (F.M.A.)

Our description is written from Kangaroo Island specimens, which are somewhat variable beneath. Our examples from the mainland are in rather poor condition but we do not consider them distinct. We can see no reason why Bethune-Baker should concede specific rank to Tepper's *O. halmaturia*: Tepper drew attention to the point that his female *O. halmaturia* was without a pale patch on forewing: therefore Bethune-Baker could not have examined *both* types of *O. halmaturia*, or he would either have corrected the sex of the supposed female, if as we expect Tepper was mistaken, or he would have separated the two species upon this unusual sexual character.

We believe that all South Australian specimens, including those from Kangaroo Island, belong to a single species, but this question cannot be definitely settled until a series of perfect specimens is secured from several localities. We provisionally place here three worn specimens from the Stirling Ranges, which possibly represent a distinct race.

175. Ogyris idmo Hewitson.

It is with some little doubt that we place the following forms as subspecies. The females are difficult to distinguish, but the males differ in shape.

175a. O. idmo idmo Hewitson. Fig. 405, 405a, 406, 406a.

Catalogue Lycaenidae British Museum, p. 2, pl. 1, fig. 3, 4, 1862.

♂. Above. Forewing brown tinged purple: apex and termen narrowly brown-black: cilia white, at veins brown-black. Hindwing brown tinged purple: apex broadly and termen narrowly, brown-black: cilia white, at veins brown-black.

Beneath. Forewing dull brown: apex and termen broadly suffused whitish: a patch at end of cell, brown-black: edges of cell bars faintly bluish white: an evenly curved discal band, brown-black. Hindwing brown-black suffused whitish: markings brown margined brown-black.

♀. Above. Forewing brown-black: basal third tinged orange-brown in cell and towards costa, and purplish in area 1a: a discal patch from vein 3 to beyond vein 6, cream: costa near apex faintly splashed with white: cilia white, at veins brown-black. Hindwing brown-black: central area tinged purple: base tinged orange-brown: cilia white, at veins brown-black.

Beneath. Forewing as in male: edges of cell bars metallic blue: discal patch as above, but reaching to vein 9. Hindwing as in male: a central suffusion, brown-black.

Loc. Wilson's Inlet 11 12. Yarloop 11. Perth 11. Capel R. 23♂ 23♀.

175b. **O. idmo waterhouseri** Bethune-Baker. **Fig. 399, 400, 401, 402.**

Transactions Entomological Society London 1905, p. 273.

♂. Above. Forewing dull purplish brown: apex and termen brown-black: cilia white, at veins brown-black. Hindwing dull purplish brown: costa broadly and termen narrowly, brown-black: cilia white, at veins brown-black.

Beneath. Forewing dull brown: apex and termen broadly suffused whitish: a patch at end of cell, brown-black: edges of cell bars, purplish white: an evenly curved broad discal band, brown-black. Hindwing brown-black suffused whitish: markings brown margined brown-black.

♀. Above. Forewing brown: basal half, not reaching costa, bluish purple: a discal patch from vein 3 to vein 6, cream: costa near apex splashed with white: cilia white, at veins brown-black. Hindwing brown: a central area bluish purple: cilia white at veins brown.

Beneath. Forewing as in male: discal patch as above, but reaching vein 9. Hindwing brown-black suffused whitish: a central suffusion, brown: markings as in male.

Loc. Dimboola 11. Grampians 11. 3♂ 4♀.

This is a very rare form: the termen of the forewing is distinctly more convex than in *idmo idmo.*

Subfamily ARHOPALINAE.

Pupa. Smooth and in transverse section ovoid. Fastened by the tail and a central silken girdle.

Imago. Of moderate size and robust build. Forewing with eleven veins (some Indian genera have twelve veins in the male): vein 11 not anastomosed with vein 12: vein 6 arising from cell well apart from vein 7: vein 5 arising from cell close to vein 6. Hindwing with an imperfectly developed anal lobe, and with a broad blunt tail to vein 2 (some Indian species have the tail absent, and others have more than one tail). Male without a sexmark.

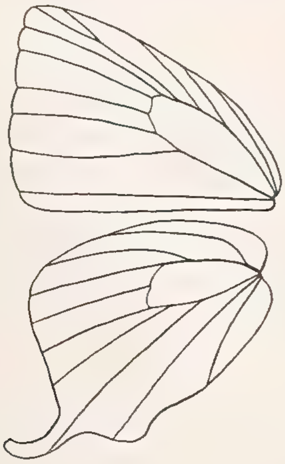

Fig. Y. Wing venation of *Arhopala amytis* (enlarged).

Range. From India, throughout the Indo-Malayan Region, to the northern half of Australia.

[illegible] veins brown-black.

[illegible]

[illegible] Fig.(♂ ♀) 400, 401, 402.

[illegible] p. 273.

[illegible] broadly and termen narrowly brownish-black [illegible]

[illegible] and termen broadly [illegible]

[illegible] with white; cilia white, at veins [illegible]

[illegible] at veins brown.

[illegible] patch as above, [illegible] vein [illegible]

[illegible]

[illegible]

Genus **ARHOPALA** Boisduval.

Voyage Astrolabe Lepidoptera, p. 75, 1832.

Forewing with vein 11 free from vein 12: vein 8 absent: vein 7 from subcostal well before end of cell, and reaching costa before apex: vein 6 from apex of cell well apart from vein 7: vein 5 from cell close to vein 6. Hindwing (in all known Australian species) with an imperfectly developed anal lobe, and with a broad bent tail to vein 2. Eyes smooth.

TYPE. *Arhopala helius* Cramer, from the Moluccas.

The butterflies of this genus are robust insects of brilliant blue or purple colour above. They are not often seen on the wing, appearing to fly only when disturbed, and the brown colours of their wings beneath harmonise closely with their resting places and make them singularly inconspicuous. The sexes are not markedly dimorphic, though the dark markings above are broader in the female. The one exception is *A. wildei,* which has white areas above in the female: this species suggests a distinct genus, in its size, shape, colour, and general appearance, but careful examination fails to reveal more than very minor points of structural divergence.

All the Australian species of the genus have a very similar wing pattern beneath, therefore a description of the spots and bands of this pattern-scheme will save much repetition of specific details.

♂♀. BENEATH. Forewing brown with markings a darker brown: a spot in cell at onethird and another at twothirds: a broad bar at end of cell: a broad discal band from vein 10 to vein 2 and irregularly below vein 2: often a cloudy irregular spot in area 1a below cell: a spot in base of area 2 and often another in base of area 3: termen shading darker brown with an obscure central broad line, paler. Hindwing brown with markings a darker brown: a curved basal series of five spots, that in cell at onethird: a central series of spots, that in cell at twothirds: a bar at end of cell, and a broad irregular discal band: a spot on anal lobe, black: a subcaudal irregular area, metallic blue or green: termen shading darker brown with an obscure central broad line, paler.

The colour of the tail above is the same as that of the dark margins: the extreme tip is whitish.

The cilia above are the same colour as the dark margins, but the tips are usually slightly paler, sometimes whitish at tornus of forewing, and usually whitish at base of tail.

176. **Arhopala amytis** Hewitson.

The Australian race of this widespread species was the first to be described.

176a. **A. amytis amytis** Hewitson. **Fig. 461, 462, 466, 467.**

Catalogue Lycaenidae British Museum, p. 4, pl. 2, fig. 7, 8, 1862.

♂. ABOVE. Forewing brilliant silky blue tinged purple: base tinged greenish: costa very narrowly, apex and termen narrowly, black. Hindwing brilliant silky blue tinged purple: base tinged greenish: termen narrowly black.

BENEATH. Forewing rich brown: towards base paler: apex broadly suffused purplish: markings typical: edges of cell spots, and basal edge of bar at end of cell, metallic white. Hindwing rich brown suffused purplish: often a subcostal area, pale brown or greyish: markings typical, rich dark brown, faintly edged whitish: subcaudal area dusted metallic green.

♀. ABOVE. Forewing silky blue faintly tinged greenish: costa narrowly, apex and termen very broadly, black. Hindwing silky blue faintly tinged greenish: costa and termen broadly black.

BENEATH as in male.

LOC. Cape York 2 4 7 8 9 10 11. Thursday Is. 5 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Claudie R. 1. Cooktown 10 11. Cairns 5 6 7. Kuranda 11 12. S. Johnstone R. 11. Ingham 4 5 8 9. Townsville 4. Mackay 2 3 4 5 11 12. 59♂ 51♀.

This butterfly is the most brilliant of the genus in Australia. The colours are very constant above but variable beneath: in some examples the darker markings beneath are almost absent, and in others a broad apical area on forewing and a subcostal area on hindwing are suffused greyish white (fig. 467).

176b. A. amytis cyronthe Miskin.

Proceedings Linnean Society N. S. Wales 1890, p. 43.

♂. ABOVE. Forewing dark silky blue tinged purple: costa very narrowly, apex and termen narrowly black. Hindwing dark silky blue tinged purple: termen narrowly black.

BENEATH. Forewing rich brown suffused purplish: markings typical: edges of cell spots, and basal edge of bar at end of cell, metallic white. Hindwing rich brown suffused purplish: markings typical, rich dark brown faintly edged whitish: subcaudal area dusted brilliant metallic green.

♀. ABOVE. Forewing dark silky blue tinged purple: costa narrowly, apex and termen very broadly, black. Hindwing dark silky blue tinged purple: costa and termen broadly black.

BENEATH as in male.

LOC. Darnley Is. 5 6. Murray Is. 8 9. Darwin 8 12. 11♂ 5♀.

This is the island race of *amytis,* and although the type came from Cape York it only occurs there as an aberration of *amytis amytis.* Our island specimens are identical with Miskin's type. Both sexes can be separated from *amytis amytis* by the very different shade of blue above, which corresponds more nearly with the blue of *A. meander madytus.* Another geographical race *amytis ribbei,* occurs on the Aru Islands, and comparison of a long series shows this to be very closely allied to *amytis cyronthe.*

177. Arhopala meander Boisduval. (New Guinea).

Voyage Astrolabe, Lepidoptera, p. 76, 1832.

We at one time believed that *Arhopala centaurus* Fabricius, described from the Banksian collection from Australia, was identical with the Australian race of *A. meander.* Messrs Bethune-Baker and Druce have very carefully examined the type, and they both assure us that this is not so.

177a. A. meander madytus Fruhstorfer. Fig. 460, 464, 465.

Iris 1913, p. 159.

♂. ABOVE. Forewing dark blue: costa very narrowly, apex and termen narrowly, dull black. Hindwing dark blue: termen narrowly dull black.

BENEATH. Forewing purplish brown: towards tornus paler: markings typical, dark brown faintly edged whitish: discal band very broad. Hindwing purplish brown: markings typical, dark brown faintly edged whitish: subcaudal area dusted metallic green.

♀. ABOVE. Forewing dark blue tinged purple: costa narrowly, apex and termen broadly, dull black. Hindwing dark blue tinged purple: costa broadly and termen narrowly, dull black.

BENEATH as in male: usually without the purplish suffusion.

LOC. Cape York 8 9. Thursday Is. 3 5. Prince of Wales Is. 3 6. Banks Is. 2. Cooktown 10. Cairns 2. Kuranda 2 10 11 12. S. Johnstone R. 11. Ingham 4 5 8. Townsville 12. Mackay 2 3 4 5 11 12. 36♂ 23♀.

178. Arhopala centaurus Fabricius.

Systema Entomologiae, p. 520, 1775.

This species has a very wide range in the Indo-Australian Region.

178a. A. centaurus eupolis Miskin. Fig. 458, 459, 463.

Proceedings Linnean Society N. S. Wales 1890, p. 42.

♂. ABOVE. Forewing dull purple: costa, apex and termen, very narrowly dull brown. Hindwing dull purple: termen narrowly dull brown.

BENEATH. Forewing dull brown: apex sometimes faintly suffused purplish: markings typical, brown faintly edged whitish. Hindwing dull brown faintly suffused purplish: markings typical, brown faintly edged whitish: subcaudal area dusted metallic blue.

♀. ABOVE. Forewing purple: base tinged blue: costa narrowly, apex and termen broadly, dull brown. Hindwing purple: base tinged blue: costa broadly, and termen narrowly, dull brown.

BENEATH as in male: purplish suffusion absent.

LOC. Cape York 2 3 4 5 10. Thursday Is. 12. Prince of Wales Is. 5 6. Claudie R. 12. Cooktown 10 11. Cairns 6 8. Chillagoe 3. Ingham 4. Townsville 2 5 6 8 11 12. Mackay 2 3 4 5. Yeppoon 1. 35♂ 23♀.

[illegible] N. S. Wales [illegible]

[illegible] specimens of the type, and they both [illegible]

[illegible] N. S. Wales [illegible]

The wing margins of this butterfly above are not so dark as in others of the genus, nor so broad as in *amytis amytis.* Its dull purple colour and brown margins give it a somewhat sombre appearance in comparison with its allies. Chillagoe is a remarkable locality for this subspecies, but we have no reason to doubt its accuracy: the late Mr. A. B. Bell, who sent us the examples, drew our attention at the time to the singularity of this and other coastal species being found so far inland.

178b. **A. centaurus asopus** nov.

♂. ABOVE. Forewing dull purplish brown: costa, apex and termen, very narrowly dull brown. Hindwing dull purplish brown: termen narrowly dull brown.

BENEATH. Forewing dull brown: apex faintly suffused purplish: markings typical, brown faintly edged whitish. Hindwing dull brown faintly suffused purplish: markings typical, brown faintly edged whitish: subcaudal area dusted metallic blue.

♀. ABOVE. Forewing purplish brown: base tinged blue: costa narrowly, apex and termen broadly, dull brown. Hindwing purplish brown: base tinged blue: costa broadly, and termen narrowly, dull brown.

BENEATH as in male: purplish suffusions absent.

LOC. Darwin 9 11 12. 6♂ 3♀.

A duller subspecies than the eastern race.

179. **Arhopala wildei** Miskin. **Fig. 192, 278, 469.**

Synonymical Catalogue Rhopalocera Australia, p. 71, 1891.

♂. ABOVE. Forewing pale dull blue: costa narrowly and termen broadly, dull black: veins irregularly dull black. Hindwing pale dull blue: termen broadly dull black: costa whitish: veins irregularly dull black.

BENEATH. Forewing white: costa, apex and termen with a series of marginal lines, pale brown: two large spots in cell, and a broad bar at end of cell, pale brown: a band of broad subapical spots, and a pair of discal spots in area 2 and area 3, pale brown. Hindwing white: a series of basal spots, that in cell at onethird, pale brown: a spot in cell at twothirds, with one above cell in area 7, and an obscure one below cell in area 1a, pale brown: a bar at end of cell, pale brown: a curved series of irregular discal spots, that on costa much the largest, pale brown: termen with a black line, a series of small lunular spots, dark brown, and a series of subterminal and subtornal interrupted lines, pale brown: subcaudal area with metallic scales absent.

♀. ABOVE. Forewing dull black: a central area, entering cell but not reaching base or dorsum, white: base below subcostal, dull black dusted pale dull blue: a spot at end of cell, dull black. Hindwing dull black: an irregular central area, whitish with veins irregularly dull black: costa whitish: base dull black dusted pale blue: a spot at end of cell, dull black.

BENEATH as in male.

LOC. Kuranda 1 4 5 8 10 11. 15♂ 5♀.

Most of the specimens have been taken by Mr. F. P. Dodd, who tells us that the butterfly flies very high and is difficult to capture, which probably accounts in some measure for its rarity. Its distribution may be much wider that at present recorded, for we have a single female of a very closely allied species from the Aru Islands.

Subfamily **THECLINAE.**

OVUM. Flattened at base and apex: densely pitted.

LARVA. Flattened: often rugged: head retractile, concealed when at rest: often gregarious: with secretory dorsal glands: always attended by ants.

PUPA. Short, stout, ovoid in section: attached by the tail and a central silken girdle beneath stones or bark, or in crevices in stems of foodplant: rarely exposed, but in one species pupates gregariously upon small silken webs in the tips of branches of foodplant. (**Fig. P451**).

Imago. Of moderate size. Forewing in the male: with all veins present in two species: with vein 8 and vein 9 absent in two species: with vein 8 absent in the remaining species. Forewing in the female: with vein 8 and vein 9 absent in two species: with vein 8 absent in the remaining species. Forewing in both sexes with vein 11 not anastomosing with vein 12: vein 6 arising from cell. Hindwing with a well developed anal lobe, and usually tailed but sometimes dentate. Males often with secondary sexual characters. (These structural characters of the imago are compiled for the Australian species of the subfamily.)

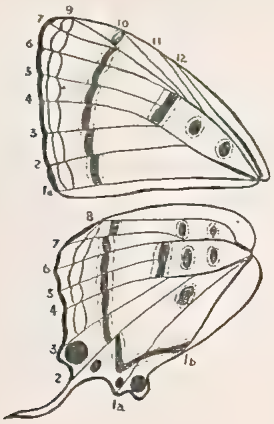

Fig. Z. Diagram of *Theclinae,* showing arrangement of spots (enlarged).

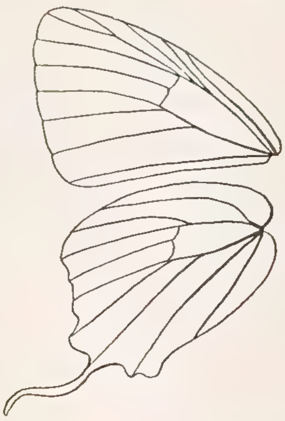

Fig. AA. Wing venation of *Ialmenus evagoras,* male (enlarged).

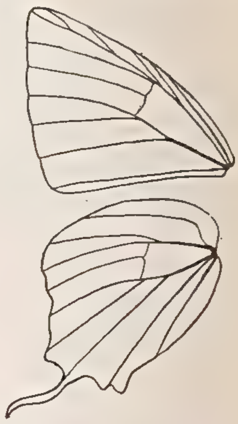

Fig. AB. Wing venation of *Protialmenus ictinus,* male (enlarged).

Range. Worldwide. Attains its maximum development in South and Central America. Two of the Australian genera occur throughout the continent: two reach as far south as the northern rivers of N. S. Wales: the remaining two are confined to the north.

Key to the Genera of *THECLINAE.*

A. Forewing with vein 8 and vein 9 absent in both sexes: hindwing with a pair of filamentous tails to vein 1a and vein 2 .... *Hypolycaena.*
B. Forewing with vein 8 absent in both sexes.
  a. Hindwing with a filamentous tail to vein 2.
    a^1. With secondary sexual characters in the male .... *Rapala.*
    b^1. Without secondary sexual characters in the male .... *Deudorix.*
  b. Hindwing with termen more or less dentate: often with a broad bent tail to vein 2 *Ialmenus.*
  c. Hindwing with a very long tail to vein 2 .... *Bindahara.*
C. Forewing with vein 8 present in the male but absent in the female .... *Protialmenus.*

Genus **IALMENUS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 75, 1816.

Forewing with vein 11 free from vein 12: vein 8 absent: vein 6 from upper apex of cell close to vein 7. Hindwing produced towards tornus: with a strong tooth or a broad bent tail to vein 2: anal lobe well developed. Eyes smooth.

Type. *Ialmenus evagoras* Donovan.

Foodplant. *Acacia.*

This genus ranges throughout the coastal districts of Australia from Cape York to Carnarvon. It is unknown in Tasmania and not yet recorded from the far northwest. It forms a natural group with the closely allied *Protialmenus* and the Indian genus *Zesius.* Two species of the genus have a broad bent tail to vein 2 of hindwing, and two species have vein 2 produced to a tooth only. The terminal teeth of vein 1a and vein 3 of hindwing are slightly longer in the female than in the male, and the palpi are also longer in the female.

[illegible] the nearest species. [illegible]

[illegible]

[illegible] in [illegible] reach [illegible]

[illegible] 2.

[illegible]

[illegible] Schrott. Bugs. p. [illegible]

vein 7. [illegible] with a dark [illegible] the cell [illegible]

[illegible]

Toronto 4/.7

After careful examination of a great number of specimens, we have discovered a single example of *evagoras evagoras* and a single example of *daemeli,* in which vein 7 of forewing is bifurcate just before its termination. This proves *Ialmenus* to be a development of *Protialmenus.*

The above figure of the markings of the undersurfaces of a typical butterfly of the genus *Ialmenus,* will save a lot of repetition in the specific descriptions. It will enable the student to follow easily our method of description, and will we hope make clear points that might be difficult to realise from the illustrations or from the specimens themselves.

♂ ♀. Beneath. Forewing with a bar in cell at onethird and another at twothirds: sometimes a spot below latter in area 1a: a bar at end of cell and a discal band from vein 10 to vein 1a. Hindwing with a spot in cell at onethird, a spot above cell in area 7, and a spot below cell in area 1a: a spot in cell at twothirds, with a spot below in area 1a: a bar at end of cell, with a spot or bar above in area 7: a curved discal band from vein 8 to vein 1b, irregular at vein 2 where it follows the vein some distance towards base: a narrow subtornal band from dorsum to about vein 3: a series of dark tornal spots in areas 1b, 1a and 2, crowned with a variable red or orange patch. The margins of both wings usually marked with a well defined terminal and subterminal band but little darker than the wing. The tail to vein 2 is always tipped whitish above.

We will use this description for the markings of the undersurface of *Protialmenus* also.

180. **Ialmenus evagoras** Donovan.

This species has a long bent tail to vein 2, a strong tooth to vein 1a and vein 3, and a smaller one to vein 4.

180a. **I. evagoras evagoras** Donovan. **Fig. 451, 452.**

Insects New Holland, pl. 30, f. 1, 1805.

♂. Above. Forewing black: a large well defined central area, reaching base and dorsum, pale metallic blue: a bar at end of cell, black: cilia black with tips whitish. Hindwing black: a large central area, reaching base, pale metallic blue: sometimes traces of a band of faint linear discal spots brown-black: traces of a band of obscure subterminal spots, whitish dusted metallic blue: tornal spots irregular, large, black crowned dull red: termen with a narrow line, whitish: cilia whitish.

Beneath. Forewing yellowish buff: markings typical, black faintly and narrowly edged whitish: a narrow subterminal band, brown: termen with a broad line, black, and an inner band, chestnut brown. Hindwing yellowish buff: markings typical, black, faintly and narrowly edged whitish: cell spots and those of area 1a, often very minute, sometimes absent: terminal line and subterminal band as on forewing: tornal spots as above.

♀. Above and Beneath as in male: termen of forewing more convex: postcellular veins of forewing sometimes broadly margined with paler scales.

Loc. Brisbane. Blackbutt 11. Richmond R. 2. Bellingen 11. Manning R. 3 4. Sydney 2 3 11. Illawarra 1 2 11 12. Blue Mts. 3 12. Moruya 1. Pambula 12. Lake Tyers 12. Wandin 12. Healesville 12. Gisborne 1 2 3 4 12. 41♂ 46♀.

The marginal colour above varies from a dark brown to a rich black only to be noticed in bred examples. The markings beneath are rarely bright chestnut brown instead of black.

The larvae feed gregariously and openly upon *Acacia decurrens, A. dealbeata* and *A. melanoxylon,* and do not shelter in the daytime. They pupate upon a series of small silken webs spun by the larvae in the leaves and twigs of the foodplant. The attending ants swarm upon both larvae and pupae.

180b. **I. evagoras eubulus** Miskin. **Fig. 453, 454.**

Transactions Entomological Society London 1876, p. 457.

♂. Above. Forewing brown-black: a large well defined central area, reaching base and dorsum, opalescent white: a faint narrow bar at end of cell, brown-black: cilia brown-black with tips whitish. Hindwing brown-black: a large central area, reaching base, opalescent white: traces of a discal band of faint narrow linear spots, brown-black: a band of obscure subterminal spots, whitish dusted opalescent: tornal spots irregular, large, black crowned reddish orange: termen with a narrow inner line, whitish: cilia whitish.

Beneath. Forewing pale buff: markings typical, narrow, black faintly and narrowly edged whitish: a subterminal narrow band, brown: termen with a broad line, black, and an inner band, chestnut brown. Hindwing pale buff: markings typical, very narrow, black faintly and narrowly edged whitish: cell spots and those of area 1a, minute, often absent: terminal line and terminal and subterminal band, as on forewing: tornal spots as above.

♀. Above and Beneath as in male: termen of forewing more convex.

Loc. Duaringa 3. Eidsvold 1 2 3. 4♂ 2♀.

This race is still very poorly represented in Australian collections.

180c. **I. evagoras eichhorni** Staudinger. **Fig. 455, 456.**

Exotische Schmetterlinge, p. 275, 1888: Druce, Proceedings Zoological Society London 1902, ii, p. 120, pl. XI fig. 11.

♂. Above. Forewing grey-brown: a large central area, reaching base and dorsum, metallic green: a bar at end of cell, dark brown: a band of obscure subterminal spots, whitish: cilia grey-brown with tips whitish. Hindwing grey-brown: a large central area, reaching base, metallic green: a band of linear discal spots, brown: a band of small subterminal spots, whitish: tornal spots irregular, black, crowned dull red: termen with a narrow inner line, whitish: cilia whitish.

Beneath. Forewing pale buff: markings typical, black: cell bars usually broad: discal band narrow: a narrow subterminal band, brown-black: termen with a broad line, black, and an inner band, bright chestnut brown. Hindwing pale buff: markings typical, narrow, black: subterminal band and termen as on forewing: tornal spots as above.

♀. Above as in male: central areas not so clearly defined and metallic blue instead of metallic green. Beneath as in male.

Loc. Cape York 5 6 7 8 9 10 11. Cooktown. 37♂ 19♀.

This subspecies is distinguished from *evagoras* and *eubulus* by its smaller size and darker central areas above, and from all species of the genus by the much darker subterminal band beneath.

181. **Ialmenus daemeli** Semper. **Fig. 442.**

Museum Godeffroy Lepidoptera 1878, p. 165: Druce, Proceedings Zoological Society London 1902, ii, p. 120 pl. XI, fig. 10, 12.

♂. Above. Forewing brown: a central area, reaching base and dorsum, metallic green: a narrow faint bar at end of cell, brown: cilia brown with tips whitish. Hindwing brown: a central area, reaching base, metallic green: sometimes traces of a discal band of linear spots, brown: sometimes traces of a series of faint cloudy subterminal spots, whitish: tornal spots irregular, black crowned dull orange-red: termen with a narrow inner line, whitish: cilia whitish.

Beneath. Forewing dull buff: markings typical, pale brown edged whitish: a narrow subterminal band, pale brown edged whitish: termen with a narrow line, black, and an inner band, dull chestnut brown. Hindwing dull buff: markings typical, pale brown edged whitish: a subterminal band, pale brown shading darker towards dorsum, edged whitish and with inner edge sometimes enlarged to a band of faint lunular spots: termen as on forewing: tornal spots as above.

♀. Above as in male: central areas not so clearly defined, and metallic blue instead of metallic green. Beneath as in male.

Loc. Cairns. Rockhampton 1 2 10 11 12. Eidsvold 12. Brisbane. Esk 2. 36♂ 20♀. [illegible] 2.

Structurally distinct from *P. ictinus*, though very similar in appearance above: the ants attending the larvae and pupae are a distinct species from those associated with the early stages of *P. ictinus*. The hindwing is not quite so strongly toothed and tailed as in the previous species.

182. **Ialmenus icilius** Hewitson. **Fig. 445, 446, 447.**

Illustrations Diurnal Lepidoptera, Lycaenidae, p. 54, pl. 24, fig. 3, 1865.

♂. Above. Forewing smoky brown: a variable, sometimes small, central area, reaching base and dorsum, metallic green: cilia brown with tips whitish. Hindwing smoky brown: an ill-defined central area, reaching base, metallic green: a terminal line, brown-black: tornal spots irregular, small, black crowned dull orange: cilia brown with tips whitish.

Beneath. Forewing dull pale brown: markings typical, obscure, pale brown sometimes very narrowly and faintly edged whitish, sometimes entirely merged in the colour of the wing: a narrow subterminal band and a broad terminal line, pale brown, sometimes entirely merged in the colour of the wing. Hindwing dull pale brown: markings typical, obscure, pale brown, sometimes very narrowly and faintly edged whitish, sometimes entirely merged in the colour of the wing: a narrow subterminal band, and a broad terminal line, pale brown, sometimes entirely merged in the colour of the wing: tornal spots as above.

merian ♀. 3.

Tovovonda 2. Hibernian ♀. 1.

[illegible] Proceedings [illegible]
[illegible] 11.

[illegible]

This subspecies [illegible] much darker coloration [illegible]

[illegible]

[illegible] very similar [illegible] associated with [illegible] early stages [illegible]

[illegible]

Quorn S.A. Erstin Nov. 1918.

Bunbury W.A. 11.12.

Wilmerring Q. 1.2

♀. Above as in male: central areas not so clearly defined and metallic blue instead of metallic green. Beneath as in male: markings usually not quite so obscure.

Loc. Gisborne 1 11 12. Castlemaine 2 3 9. Adelaide 2 12. Bridgetown 2. Perth. Watheroo 11. Geraldton 11. Cue. Carnarvon. Fortescue R. 24♂ 14♀.

The hindwing is without a tail, but vein 2 is strongly toothed: the markings beneath are usually very obscure and sometimes absent.

This is the smallest species of the genus. Hewitson described the male as blue, but the colour when compared with that of the female is distinctly green. We consider *Ialmenus clementi* Druce (Proc. Zool. Soc. 1902, ii. p. 120, pl. XI, fig. 9), a synonym, described from small and faded specimens.

183. Ialmenus inous Hewitson. Fig. 448, 449.

Illustrations Diurnal Lepidoptera, Lycaenidae, p. 54, pl. 24, fig. 1, 2, 1865.

♂. Above. Forewing dark brown: a central area, reaching base and dorsum, metallic green: cilia dark brown with tips whitish. Hindwing dark brown: a central area, reaching base, metallic green: a terminal line, black: tornal spots irregular, large, black crowned reddish orange: cilia dark brown with tips whitish.

Beneath. Forewing pale brown: markings typical, broad, brown edged whitish: a broad subterminal band, brown edged whitish, and with inner edge often enlarged to a band of faint lunular spots: termen with a broad band, brown. Hindwing pale brown: markings typical, broad, brown edged whitish: a broad subterminal band, brown edged whitish, with inner edge enlarged to a band of faint lunular spots: termen broadly brown: tornal spots as above.

♀. Above as in male: central areas not so clearly defined, and metallic blue instead of metallic green. Beneath as in male.

Loc. Yallingup 11. Waroona 1 10 11 12. Kellerberrin. Carnarvon. 35♂ 10♀. Nedlands Perth 27.10.23 (MJW).

This is a slightly larger and much darker species than *I. icilius*, and the markings beneath are much more distinct. The hindwing is without a tail but vein 2 is strongly toothed.

Genus PROTIALMENUS nov.

Forewing with vein 11 free from vein 12: vein 8 from vein 7 near apex in the male, but absent in the female: vein 6 usually from cell close to vein 7 but sometimes well apart from vein 7. Hindwing produced towards tornus: termen dentate: sometimes with a broad bent tail to vein 2: anal lobe well developed. Eyes smooth.

Type. *Protialmenus ictinus* Hewitson.

Foodplant. *Acacia.*

This genus is erected for the ancestral forms of *Ialmenus*, in which vein 8 of the forewing has not yet been lost in the male. *P. ictinus* is very similar in general appearance above, to *Ialmenus daemeli* and *P. lithochroa* to *Ialmenus icilius*. *Zesius chrysomallus* from India, though structurally very closely allied to *Protialmenus*, is superficially very dissimilar.

184. Protialmenus ictinus Hewitson. Fig. 450, 457.

Illustrations Diurnal Lepidoptera Lycaenidae, p. 54, pl. 24, fig. 6, 7, 8, 1865.

♂. Above. Forewing brown: a central area, reaching base and dorsum, metallic green: a narrow faint bar at end of cell, brown: cilia brown with tips whitish. Hindwing brown: a central area, reaching base, metallic green: sometimes traces of a discal band of linear spots, brown: sometimes traces of a series of faint cloudy subterminal spots, whitish: tornal spots irregular, black crowned dull orange-red: termen with a narrow inner line, whitish: cilia whitish.

Beneath. Forewing dull buff: markings typical, narrow, black narrowly and faintly edged whitish: a narrow subterminal band, brown edged whitish: termen with a narrow line, black, and an inner band dull chestnut brown. Hindwing dull buff: markings typical, narrow, black narrowly edged whitish: a subterminal band, pale brown shading darker towards dorsum, edged whitish, with the inner edge sometimes enlarged to a band of faint lunular spots: termen as on forewing: tornal spots as above.

♀. Above as in male: central areas not so clearly defined, and metallic blue instead of metallic green. Beneath as in male.

Loc. Kuranda 1 5. Herberton 1 12. Rockhampton 2 12. Eidsvold 1. Brisbane. Manning R. 3. Sydney 1 4 11. Blue Mts. 1 2 12. Condobolin 11. Tallarook. Malmsbury. 30♂ 27♀.

This species varies beneath, both in the shade of the wing colour and in the width of the black markings. These markings are usually rather broader than in **fig. 457**, but we have examples in which they are as narrow as those of *I. evagoras eubulus* in **fig. 454**: normally they are about the same width as those of *I. evagoras eichhorni* as shown in **Fig. 456**. The hindwing has a long bent tail to vein 2, and a strong tooth to vein 1a and to vein 3.

185. **Protialmenus lithochroa** Waterhouse. **Fig. 443, 444.**

Proceedings Linnean Society N. S. Wales 1903, p. 258, pl. 2, fig. 29.

♂. Above. Forewing smoky brown: a variable, sometimes small, central area, reaching base and dorsum, metallic green: cilia brown with tips whitish. Hindwing smoky brown: an ill-defined central area, reaching base, metallic green: a terminal line, brown: tornal spots irregular, small, brown-black faintly crowned dull orange: cilia brown with tips whitish.

Beneath. Forewing very pale brown: markings typical, obscure, pale brown faintly edged whitish: a narrow subterminal line, pale brown narrowly edged whitish: a terminal line, brown. Hindwing very pale brown: markings typical, obscure, pale brown faintly edged whitish: subterminal band and terminal line as on forewing: tornal spots as above.

♀. Above as in male: slightly paler: metallic areas less clearly defined and metallic blue instead of metallic green.

Beneath as in male.

Loc. Adelaide 3. 14♂ 9♀.

The hindwing has a distinct tail to vein 2, but it is much shorter than in the last species, and the teeth of vein 1a and vein 3 are blunter.

Genus **HYPOLYCAENA** Felder.

Wiener Entomologische Monatschrift 1862, p. 293.

Forewing with vein 12 reaching costa about end of cell: vein 11 free from vein 12: vein 8 and vein 9 absent. Hindwing produced towards tornus: with a filamentous tail to vein 1a and another to vein 2: anal lobe well developed. Eyes hairy.

Type. *Hypolycaena tmolus* Felder, from the Phillipine Is.

This genus is easily separated from all other Lycaenids in Australia, by the absence of two veins in the forewing, and by the presence of two filamentous tails, of equal length, in the hindwing. The two species, though structurally very closely allied, are of very dissimilar appearance, and we anticipate that a new genus will eventually be erected for *H. danis*.

186. **Hypolycaena phorbas** Fabricius. **Fig. 195, 196, 197**

Entomologia Systematica, p. 277, 1793.

♂. Above. Forewing dull black: a large central area, reaching base and dorsum, silky blue: a large circular sexmark, enclosing end of cell, black: sometimes an obscure central patch in area 1a, whitish: cilia black with tips whitish. Hindwing dull black suffused blue: costa broadly dull black: a series of subterminal rings, whitish, those at tornus enclosing two subcaudal spots, black: anal lobe centred dull orange: terminal line black: tails black with tips white: cilia white.

Beneath. Forewing grey suffused whitish: a bar at end of cell, and a discal band from vein 10 to vein 1a, pale yellow-brown outlined pale brown or brown and faintly edged white: a subterminal and a terminal variable band, pale brown. Hindwing grey suffused whitish: a spot in base of area 7, brown-black: a bar at end of cell and an irregular discal band, pale yellow-brown outlined pale brown or brown, and faintly edged whitish: tornal spot in area 2, and that on anal lobe, black crowned orange.

♀. Above. Forewing dull black: an irregular postcellular, sometimes restricted and obscure, central area, white: cilia dull black with tips whitish. Hindwing dull black: central area sometimes faintly suffused whitish: a series of subterminal rings, whitish, those at tornus enclosing two subcaudal spots, black: anal lobe centred dull orange: terminal line black: cilia white.

Beneath as in male.

Loc. Cape York 5 11. Thursday Is. 4 5 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 5 6 12. Murray Is. 8 9. Claudie R. 1. Cooktown 4 5 10 11. Cairns 1 2 4 6 7 11 12. Kuranda 1 11 12. Herberton 2. Innisfail 11. Ingham 5 9. Townsville 1 3 7 11. Mackay 2 3 4 5 11 12. Darwin 1 8 9 11 12. 65♂ 63♀.

This species shows very considerable variation, but has not in our opinion yet developed a distinct Australian race. In the male the colour of the forewing above varies from greenish blue to purple, and that of the hindwing from blue to purple, according to the angle of light. Some males have a distinct patch of whitish scales in area 1a of forewing above. Sometimes the whitish area on forewing above in the female extends from before vein 1a to beyond vein 4, and sometimes it is only indicated by a few whitish scales. A dark variety of the male from Cooktown was named by Staudinger *H. noctula,* but this was evidently only an aberration.

187. **Hypolycaena danis** Felder. (Amboina).

Though structurally almost identical with *H. phorbas,* this species has a very different general appearance. Its subspecies include *dirpiha* from the Aru Is., *danisoides* from the Key Is., and *milo* from the Solomons.

187a. **H. danis turneri** Waterhouse. **Fig. 439.**

Proceedings Linnean Society N. S. Wales 1902, p. 648.

♂. ABOVE. Forewing white: base, costa and termen, broadly black: cilia black. Hindwing white: base narrowly and termen broadly, black: a series of subcaudal spots, black, outwardly edged whitish, and inwardly edged metallic blue: tails black with tips white: cilia black.

BENEATH. Forewing as above: margins brown-black: sometimes traces of a terminal band of narrow rings, whitish. Hindwing white: base and termen dull black: subcaudal spots as above (that in area 1a only indicated by its pale margins), but ringed metallic blue: an irregular narrow subtornal line, metallic blue: the subcaudal rings sometimes extended as an obscure and diminishing band of faint whitish rings, to apex.

♀. ABOVE as in male: costa and termen of forewing more convex: hindwing broader.

BENEATH as in male.

LOC. Cape York 9 11. Thursday Is. 1. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Kuranda 1 2 3 5 7 11 12. Herberton 2. 38♂ 34♀.

The blue scales above at first view are not discernible, but at a certain angle of light are brilliantly clear. Some of the females from Kuranda have a distinct subterminal band of small metallic blue rings on both wings, beneath. Bred examples of the female show the hindwing beneath rich cream instead of white.

Genus **DEUDORIX** Hewitson.

Illustrations Diurnal Lepidoptera, Lycaenidae, p. 16, 1863.

Forewing with vein 11 free from vein 12: vein 8 absent: vein 6 arising from end of cell. Hindwing produced towards tornus, and with a single filamentous tail to vein 2: anal lobe well developed. Eyes hairy.

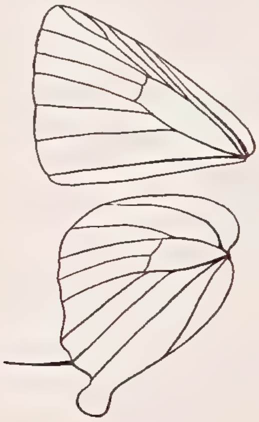

Fig. AC. Wing venation of *Deudorix diovis* (enlarged).

TYPE. *Deudorix epijarbas* Moore, from India.

This genus is closely allied to the next, but differs in the absence of a sexmark in the male. The position of the subcaudal spot beneath is peculiar: instead of being placed as usual just within the terminal line, it is upon the subterminal band some distance within the wing.

188. **Deudorix epijarbas** Moore. (India).

188a. **D. epijarbas diovis** Hewitson. **Fig. 198, 199, 200.**

Illustrations Diurnal Lepidoptera, Lycaenidae, p. 20, pl. VII, fig. 10, 11, 12, 1863.

♂. Above. Forewing black: a central patch below cell, reaching base and sometimes reaching dorsum, coppery red: cilia black. Hindwing coppery red: costa broadly, and base, black: terminal line and veins in red area, black: anal lobe coppery red centred black: tail black with tip white: cilia brown.

Beneath. Forewing pale brown: a broad bar at end of cell, and a broad discal band from vein 10 to vein 1a, brown narrowly edged whitish. Hindwing pale brown: a broad bar at end of cell, and an irregular broad discal band, brown narrowly edged whitish: a broad subterminal band, brown, with a subcaudal spot in area 2, black ringed pale orange or orange-brown: anal lobe black edged whitish and crowned with a few scales, metallic green: tornus with an irregular narrow band, metallic green.

♀. Above. Forewing brown: costa and termen broadly and obscurely, dark brown: cilia dark brown. Hindwing brown: tail black with tip white: anal lobe black centred coppery red: terminal line dark brown: cilia brown.

Beneath as in male: paler: whitish edges of bands broader.

Loc. Kuranda 2 3 4 10 11. Ingham 9. Mackay 1 3 4 11. Brisbane 2 5 6. Blackbutt. Richmond R. 1 5 9. Manning R. 3. 42♂ 21♀.
2.4.

Females from Brisbane and the northern rivers of N. S. Wales are dark grey instead of brown.

189. **Deudorix epirus** Felder. (Amboina).

We have no example from the type locality, but as Australian specimens differ from those received from the Aru Islands, and New Guinea, an Australian race is apparent.

189a. **D. epirus agimar** Fruhstorfer. **Fig. 194, 201, 274, 275.**

Societas Entomologica 1908, p. 38.

♂. Above. Forewing black: a central area below cell, reaching base and dorsum, bright blue: cilia black. Hindwing bright blue: costa whitish, at base black: terminal line, and veins, black: anal lobe black centred orange: tail black with tip white: cilia black.

Beneath. Forewing cream: a broad discal band diminishing to a point in area 1a, dark brown: apex and termen broadly brown with a subterminal line, cream, and a terminal line, dark brown. Hindwing cream: dorsum brown edged cream: a discal band, dark brown: termen as on forewing: a tornal area, orange, with a pair of subcaudal spots, brown-black, and some irregular scalings, metallic blue: anal lobe brown-black.

♀. Above. Forewing black: a large central postcellular area, reaching to vein 1a, white: base, lower portion of cell, and dorsum, blue: cilia black. Hindwing white: a basal and a tornal area, and the veins connecting them, blue: tornus narrowly, and termen towards apex broadly, black: anal lobe black centred orange: tail black with tip white: cilia black.

Beneath. Forewing white: markings as in male. Hindwing white: markings as in male.

Loc. Cape York 2 3 4. Prince of Wales Is. 6. Banks Is. 2. 6♂ 4♀.

Genus **RAPALA** Moore.

Lepidoptera of Ceylon, i, p. 105, 1881.

Forewing with vein 11 free from vein 12 though sharply bent towards it: vein 8 absent: vein 6 from near end of cell: male with a pencil of stiff hairs, directed obliquely backwards, upon dorsum beneath at onethird from base. Hindwing produced towards tornus, and with a filamentous tail to vein 2: anal lobe well developed: male with a glandular sexmark at base of vein 7. Eyes hairy.

Type. *Rapala varuna* Horsfield, from Java.

Brisbane July 1915 (R.I)

190. **Rapala varuna** Horsfield. (Java).

190a. **R. varuna simsoni** Miskin. **Fig. 208, 209.**

Entomologists' Monthly Magazine 1874, Vol. XI, p. 165.

♂. Above. Forewing steely blue: costa, apex and termen, obscurely dull black: a patch on veins at lower apex of cell, dull yellow-brown: cilia dull black. Hindwing steely blue: costa dull black: tornal hairs whitish: tail black with tip white: anal lobe black dusted dull orange: cilia dull black: a glandular patch of sexscales in area 7 near origin of vein 7, dull grey.

Beneath. Forewing dull brown: a bar at end of cell, brown edged dark brown: a broad discal band from vein 10 to vein 1a, dark brown sometimes faintly edged whitish: a pencil of hairs on dorsum at onethird, brown-black. Hindwing dull brown: a bar at end of cell, brown edged dark brown: an irregular discal band, brown or yellow-brown outlined dark brown and towards tornus edged whitish: tornus with an irregular line, whitish: a subcaudal spot in area 2, black crowned dull orange: anal lobe black.

♀. Above. Forewing silky purple: costa, apex and termen, obscurely dark brown: cilia dark brown. Hindwing silky purple: costa dark brown: tail and anal lobe as in male.

Beneath as in male: pale brown.

Loc. Cape York 1 2 4. Thursday Is. 1 5. Prince of Wales Is. 5 6. Banks Is. 2 3. Kuranda 1 3 4 6. Ingham 9. Townsville 4 5. Mackay 3 4 9. Brisbane. 41♂ 21♀.

191. **Rapala democles** Miskin. **Fig. 276, 277.**

Transactions Entomological Society London 1884, p. 95.

♂. Above. Forewing black: a central area, reaching base and dorsum and just reaching cell, bright blue: cilia black with tips whitish. Hindwing black: a central area, reaching base, bright blue: tail black with tip white: anal lobe black: cilia black: a glandular patch of sexscales in areas 6 and 7 near origin of vein 7, brown.

Beneath. Forewing grey suffused whitish: termen obscurely brown: a broad bar at end of cell, and an irregular broad discal band, brown edged dark brown: a pencil of hairs on dorsum at onethird, black. Hindwing grey suffused whitish: termen obscurely brown: a bar at end of cell, and an irregular discal band, yellow-brown edged dark brown: subcaudal spot and anal lobe, black.

♀. Unknown.

Loc. Prince of Wales Is. 5. Johnstone R. (Basilisk Range) type. 3♂.

We have seen but three males of this species. They are all in poor condition with the tornus of hindwing more or less damaged. One example shows a tail to vein 2 and it is quite possible the species has a second tail to vein 1a. It recalls the Indian genus *Camena*, but until perfect specimens are available, we can only leave it in *Rapala*.

Genus **BINDAHARA** Moore.

Lepidoptera of Ceylon, i, p. 111, 1881.

Forewing with vein 12 reaching costa before end of cell: vein 11 free from vein 12 but bent towards it: vein 8 absent: vein 6 from upper end of cell: male with a pencil of stiff hairs, directed upwards, upon dorsum beneath at onethird from base. Hindwing produced at vein 2 to a very long stout tail: anal lobe well developed: male with a glandular sexmark at base of vein 7. Eyes hairy.

Type. *Bindahara phocides* Fabricius, from India.

192. **Bindahara phocides** Fabricius. (India).

This species is the only one of the genus, but has a number of local races ranging from India to the Solomon Islands. The males differ chiefly in the extent of the blue area of hindwing above.

192a. **B. phocides isabella** Felder. **Fig. 440, 441.**

Sitzungsberichte Akademie Wissenschaften Wien 1860, p. 451.

♂. Above. Forewing velvety black: cilia black. Hindwing velvety black: a broad patch on termen, from vein 3 to vein 7, dark metallic blue: subcaudal area and tail, dull orange-yellow: cilia from vein 3 to apex, black: a glandular patch of sexscales in areas 6 and 7 near origin of vein 7, dull black.

Beneath. Forewing brown: a spot in base of cell, brown-black: a narrow bar at end of cell indicated by its whitish edges only: a broad band across cell and a broad discal band, rich brown edged whitish: termen obscurely brown. Hindwing orange-brown: costa brown: a series of basal spots, the largest in area 7, brown-black: an obscure bar at end of cell, brown: an irregular broad discal band, rich brown on costal area and indicated by brown linear edges only on remainder of wing: a narrow subterminal line, brown-black: a pair of subcaudal spots, brown-black crowned metallic blue: anal lobe black edged orange-brown.

♀. Above. Forewing dull black: cilia black. Hindwing with basal half dull black and outer half white: a subcaudal spot in area 2, black: tail white edged black: a terminal narrow line, black: cilia white.

Beneath. Forewing white: markings as in male: termen brown. Hindwing white: markings as in male: a narrow terminal line, black: tail black with a narrow central line, white: anal lobe edged white.

Loc. Cape York 1 2 3 5. Banks Is. 2 3. Murray Is. 8. Cooktown 10 11 12. Kuranda 1 2 3 4 5 11 12. Atherton 3 11. Townsville 12. 38♂ 20♀.

Subfamily LIPHYRINAE.

Ovum. Cylindrical: flattened at base and apex: drum shaped.

Larva. Flattened: oval: chitinous.

Pupa. Of the usual Lycaenid type: pupation takes place within the final larval skin, which acts as a shelter from the ants within whose leafnests the larvae and pupae are found.

Imago. Of large size and very robust build. Forewing with twelve veins: vein 11 not anastomosed with vein 12: vein 7 reaching termen well beyond apex: vein 6 sometimes from cell and sometimes from vein 7. Hindwing with termen produced at vein 1a. Male without a sexmark. Eyes smooth. Antennae short and stout, and without a distinct club.

Range. From Assam, throughout the Indo-Malayan Region, to the northern parts of Australia.

(For a full account of the very remarkable life history of the one species of this subfamily, see F. P. Dodd in Entomologist 1902 and 1903, and Dr. Chapman in same Journal for 1902.)

Genus **LIPHYRA** Westwood.

Proceedings Entomological Society London 1864, p. 31.

The structural characters are defined under the subfamily. This is an interesting aberrant genus erected for a single species which has developed several local races not very widely divergent. It seems quite out of place among the delicate *Lycaenidae*, but structurally belongs to that family, though in general appearance it resembles the *Brassolinae* of South America. It differs from all other Australian *Lycaenidae* in vein 8 of the forewing being present in both sexes.

Type. *Liphyra brassolis* Westwood, from Assam.

Food. According to F. P. Dodd, the larvae feed upon the ova and pupae of the green tree-ant *Oecophylla smaragdina.*

193. **Liphyra brassolis** Westwood. (Assam).

The Australian races differ from typical *brassolis* (according to the published figures) in having larger black areas above, especially in the male.

193a. **L. brassolis major** Rothschild. **Fig. 570, 571, 592, 593.**

Novitates Zoologicae 1898, p. 97.

♂. Above. Forewing brown-black: costa very narrowly orange-brown, and towards apex obscurely splashed with white: a basal area, reaching costa and dorsum, orange: a series of three irregular discal spots, in area 2, area 3 and between vein 4 and vein 6, orange: cilia orange-brown. Hindwing orange: a broad terminal area, from apex to vein 2, brown-black: tornus orange-brown: a series of three irregular discal spots in areas 2, 3, and 5, black: cilia orange-brown.

[illegible]

[illegible] in fore[illegible] and pleura are found.

[illegible] apex; vein 6 [illegible] from [illegible] in. Male [illegible] normally [illegible]

[illegible] pan, to [illegible] base of [illegible]

[illegible] 1914 n. sp.

[illegible] interest [illegible] not very well [illegible] structurally belongs to [illegible]

[illegible] vein 6 emerges [illegible]

Beneath. Forewing pale brown suffused silvery white: basal third orange-yellow: a large patch in end of cell and beyond cell from vein 12 to vein 2, black: discal spots of upper surface faintly yellow: a narrow terminal line, silvery white. Hindwing pale brown irregularly suffused silvery white: costa with irregular striae, red-brown: a narrow irregular bar from dorsum near base to vein 2, red-brown edged silvery white: dorsal area below bar paler, and with obscure irregular striae, red-brown: a narrow terminal line, silvery white.

♀. Above. Forewing orange: termen broadly brown-black obscurely edged orange-brown: costa narrowly orange-brown: a large irregular spot in end of cell and beyond, and confluent with two large irregular black discal spots in areas 2 and 3, black: cilia orange-brown. Hindwing orange: termen with a broad band, brown-black edged orange-brown: tornus orange-brown: a series of three irregular discal spots in areas 2, 3 and 5, black: cilia orange-brown.

Beneath as in male: silvery suffusion much fainter: terminal whitish line not silvery and only traceable on tornal half of wing.

Loc. Cape York 2 11 12. Cooktown 10 11. Cairns 10. Townsville 1 2 7. 17♂ 11♀.

We are indebted to Mr. F. P. Dodd for the very interesting examples from which we have produced figures 592 and 593. These are freshly emerged butterflies with the sticky white fugitive scales still adhering to the wings. These curious scales afford protection from the ants during the helplessness of emergence, and are dislodged by the first few movements of flight. As soon as these specialised scales are lost, the butterflies appear as in **figures 570** and **571**.

193b. **L. brassolis melania** nov.

♂. Above. Forewing black: costa faintly orange-brown: a basal area, just reaching costa and dorsum but not reaching area 2, orange-brown: a series of three irregular large discal spots in area 2, area 3 and between vein 4 and vein 6, orange: cilia orange-brown. Hindwing orange-brown: a broad terminal area from apex to vein 2, black: tornus orange-black: a series of three irregular discal spots in areas 2, 3 and 5, black: cilia orange-brown.

Beneath. Forewing pale brown suffused silvery: basal third orange-yellow: a large patch in end of cell, and beyond cell from vein 12 to vein 2, black: discal spots of upper surface faintly yellow: a narrow terminal line, silvery. Hindwing pale brown irregularly suffused silvery: costa with irregular striae, red-brown: a narrow irregular bar from dorsum near base to vein 2, red-brown edged silvery: dorsal area below bar paler, and with obscure irregular striae, red-brown: a narrow terminal line, silvery.

Loc. Darwin 9 12. 3♂.

This subspecies is much darker than *brassolis major* both above and beneath, and the orange-brown area of forewing above does not extend beyond vein 2.

Family PIERIDAE.

No measurements are given as, unless stated expressly to the contrary, the figure is always that of a butterfly of average size. As the male is usually more plentiful than the female, and as the characters used in the published descriptions are usually taken from the male, that sex alone is figured, except in cases where marked differences of shape or pattern occur in the female. Usually the male is whiter than the female, the dark borders of the wings above are narrower, and the termen of the forewing is straighter.

Ovum. Much higher than broad, usually tapering towards the summit: covered with longitudinal ribs and sometimes with cross lines: often deposited upon the foodplant singly, but sometimes a number close together.

Larva. Cylindrical: smooth or with scanty short hairs: colour usually green: often gregarious in habit: foodplants chiefly *Capparidaceae* and *Loranthaceae*. **(Fig. L. 500).**

Pupa. Angulated, pointed at both ends, often with dorsal spikes and ridges: attached by the tail and a central silken girdle, to the undersurface of a leaf or bough of the foodplant. In *Delias harpalyce* attached to a silken web spun by the larvae upon the leaves and twigs of the foodplant. **(Fig. P. 500, P. 521).**

Imago. Of moderate or small size: with six perfect walking legs in both sexes: legs without spurs, claws bifid. Forewing with vein 11 free (except in *Anaphaeis*, where it is anastomosed with vein 12): vein 10 either from subcostal or from vein 7: vein 9 absent in *Delias* and *Elodina*: vein 8 absent (in all Australian genera): vein 6 from vein 7. Hindwing with vein 1b present: precostal spur present (except in *Terias*): dorsum channelled to receive abdomen. Abdomen of the male with anal valves (less prominent than in most species of the *Papilionidae*). Eyes smooth (in all Australian species). Clubs of antennae long and slender.

Range. Worldwide: reaching even to within the Arctic circle.

In a large number of the species of this family both wings of the male have secondary sexual characters: these are placed on the forewing beneath and on the hindwing above, where the wings overlap. The hindwing (in all Australian species) is evenly rounded, never angulated or produced to a tail. The colours above are almost always white or yellow with black margins, and the margins are usually much broader in the female. In some of the genera the dark bars or spots, marking the ends of the wing cells, are specially noticeable: these spots or bars are invariably larger in the female, and their size often forms a guide to the sex of the specimen: this can however always be determined by the presence or absence of the anal valves of the abdomen.

The family contains some genera of very stout and strong build and rapid flight (*Catopsilia* and *Appias*), and others of very slender build and weak flight (*Terias* and *Elodina*). Many of the species are extremely local in their habits, and some are sporadic, being very plentiful in some years and almost absent in others.

It is within this family that the migratory habit is most noticeable, both in Australia and elsewhere. We have observed several immense flights of *teutonia* and of *pythias* in the neighbourhood of Sydney, and their direction has invariably been from the north to the south: on the other hand, flights of *teutonia* we have noted in Gisborne have all been travelling almost due north. During these flights all the butterflies seemed to be steadily pursuing the one course, only occasionally visiting a flower, and rarely resting until evening, excepting possibly for a time while a heavy cloud obscured the sun. In the evening and through the night these migratory butterflies often rest in company: scores of *teutonia* have many times been noticed settled upon one small bough. They always choose for a restingplace those plants or trees that blend most closely with their own colours. During a flight of *pythias* (including *lactcola*) in Sydney, extending over a period of ten or twelve days in February 1895, we made a practice of visiting clumps of the lighter variety of bamboo in the early morning hours. Then, before the butterflies had recovered from the torpor of the night, we were able to select the finest specimens, and lift them from their restingplace with the forceps.

In the southeast of Australia *Elodina* and *Terias* occur but rarely, and their flight is very irregular and apparently aimless, as if they felt they were far from their customary haunts. In more northern latitudes *Elodina* is constantly seen flying round small trees and flowering shrubs, and *Terias* flits in numbers over the grass and along the glades. *Delias aganippe* has the habit of soaring high above the treetops.

[illegible]

[illegible] the country [illegible]

[illegible] the daylight simply, [illegible]

[illegible]

[illegible] of the habit [illegible]

[illegible]

[illegible] a flight [illegible]

The *Pieridae* form a small and compact family of butterflies, and there can now be but few new forms awaiting discovery in Australia. The Australian species have never more than eleven veins in the forewing and in two genera only ten: vein 8 is always absent: vein 9 is absent in *Delias* and in *Elodina*, and in other genera is just on the point of being lost, for it is emitted from vein 7 close to the apex of the wing.

Key to the Genera of *PIERIDAE*.

A. Forewing with vein 8 and vein 9 absent: vein 11 and vein 12 free.
  a. Forewing with vein 10 from vein 7 close to apex .... *Delias.*
  b. Forewing with vein 10 from vein 7 just beyond end of cell .... *Elodina.*
B. Forewing with vein 8 absent and vein 9 present.
  a. Forewing with vein 11 and vein 12 anastomosing .... *Anaphaeis.*
  b. Forewing with vein 11 and vein 12 free.
    *a*¹. Precostal spur of hindwing well developed: vein 10 of forewing from subcostal well before end of cell.
      *a*². Apex of forewing acute: anal segment of abdomen with two prominent tufts of stiff hairs beneath .... *Appias.*
      *b*². Apex of forewing rounded: anal segment of abdomen without tufts of hairs beneath *Huphina.*
    *b*¹. Precostal spur of hindwing feebly developed: vein 10 of forewing from subcostal just before end of cell .... *Catopsilia.*
    *c*¹. Precostal spur of hindwing absent .... *Terias.*

Genus **DELIAS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 91, 1816: Butler, Annals Magazine Natural History 1896, p. 143: Mitis, Iris 1893, pp. 97-153.

Antennae about half the length of costa. Forewing with vein 11 from subcostal onefifth before end of cell: vein 10 from vein 7 close to apex: vein 9 and vein 8 absent: vein 6 from vein 7 at about half. Hindwing with precostal spur present. (**Fig. AD**). Pupa angular and with long dorsal spines, the front pair of which are often hooked (**Fig. P. 521**).

Type. *Delias egialea* Cramer, from Java.

Foodplant. *Loranthus.*

This genus is confined to the Indo-Australian Region: several of our species have representatives in New Guinea and elsewhere, but *harpalyce* and *aganippe* are confined to Australia. The butterflies are all handsome insects with a more or less brilliant display of colours beneath: *inferna* is the one exception, being brilliantly coloured above and almost entirely black beneath: the black margins are always much broader in the female. We cannot recognise *D. ellipsis* described by Johannis as from Australia, and as Fruhstorfer does not mention it in Seitz' Macrolepidoptera, *Pieridae,* we have decided to omit it.

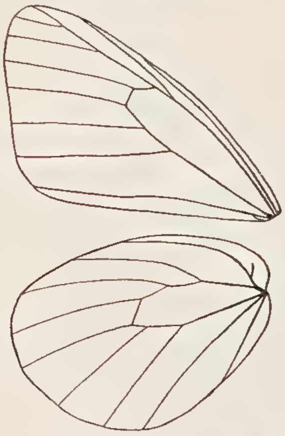

Fig. AD. Wing venation of *Delias argenthona.*

In some species of this genus the larvae are gregarious, but in others not more than three or four will be found upon the one foodplant. The known Australian larvae all feed upon some species of mistletoe (*Loranthus*), but *aganippe* also feeds upon native cherry (*Exocarpus cupressiformis*). The absence of *Loranthus* from Tasmania accounts for the absence of the genus *Delias* from the island, but as the native cherry occurs plentifully, it is just possible *aganippe* will yet be taken there.

194. Delias argenthona Fabricius.

Representatives of this species occur in New Guinea, the Solomon Islands, and elsewhere.

194a. D. argenthona argenthona Fabricius. Fig. 520.

Entomologia Systematica, iii, p. 200, 1793.

♂. Above. Forewing white: costa narrowly, and apex, black: a series of broad elongate subapical spots, white. Hindwing white: termen narrowly black, with a series of obscure subterminal spots, whitish: markings of undersurface faintly visible.

Beneath. Forewing as above: black apex broader: base faintly yellow: usually a postcellular spot, white: subapical spots cream. Hindwing with basal area yellow: a narrow central area, white: a broad terminal area, sometimes occupying more and sometimes less than half the wing, black with a series of large subterminal spots, scarlet often edged paler: a spot on discocellulars, scarlet often edged paler, and sometimes connected with the subterminal spots by a paler stalk.

♀. Above. Forewing cream: costa narrowly and apex broadly, black: a postcellular spot, cream: a series of broad elongate subapical spots, cream. Hindwing cream: termen and postcellular veins, narrowly black with a series of obscure subterminal spots, cream: markings on undersurface faintly visible.

Beneath as in male.

Loc. Cape York 8 10. Prince of Wales Is. 5 6. Cooktown 10 11. Cairns 6 7. Kuranda 1 6 7 9 10 12. Ingham 5 9. Townsville 5 6 7. Mackay 3 10 11. Rockhampton. Brisbane 4 5 6 7 10. Esk 2. Richmond R. 1 2 3 4. 9.10.12. Sydney. Illawarra. Roper R. 34♂ 35♀.

The central scarlet spot of hindwing beneath is variable in size and shape, usually obscurely margined paler, and often connected by a paler stalk with the scarlet subterminal spots. These spots are variable in size and shape, sometimes circular and regular, and sometimes so extended towards the centre of the wing as to occupy more than half of the black terminal area. This butterfly rarely comes so far south as Sydney, but is abundant at Brisbane.

194aa. D. argenthona argenthona, ♀ f. seminigra Fruhstorfer.

Seitz Macrolepidoptera, Vol. IX, p. 126, pl. 55a.

♀. Above. Forewing cream: costa, apex broadly, and termen, black: a postcellular spot, cream: a series of elongate subapical spots, cream. Hindwing black: base and dorsum broadly dusted grey: a spot at end of cell, and a series of subterminal spots, faintly scarlet.

Beneath as in typical form: base of hindwing dusted black.

Loc. Cairns 8. Townsville 6. Rockhampton. Brisbane. 9♀.

This form occurs only during the winter months.

194b. D. argenthona fragalactea Butler.

Annals Magazine Natural History 1869, p. 243: Lepidoptera Exotica, p. 64, pl. 24, f. 1, 1871.

♂. Above. Forewing white: costa narrowly and apex, black: a series of elongate subapical spots, white. Hindwing white: termen black: markings of undersurface faintly visible.

Beneath. Forewing as above: black apex slightly broader, but not reaching into cell: base faintly yellow: subapical spots cream. Hindwing with basal area yellow: a narrow central area, white: a broad terminal area, rarely reaching into cell, black with a series of large subterminal spots, scarlet narrowly edged paler: a spot on discocellulars, scarlet narrowly edged paler.

Loc. King Sound. Darwin 1 8 9. Melville Is. 5♂.

This is not a seasonal form, but the northwestern race of *argenthona*, to which it bears the same relation that *oestiva* bears to *mysis*. Compared with typical *argenthona* the margins are more intensely black: the postcellular spot of forewing beneath is not enclosed in the black apical area: the obscure subterminal spots of hindwing above are merged in the black termen: the subterminal spots of hindwing beneath are smaller and more regular, and the central scarlet spot of hindwing beneath is smaller and not connected with the subterminal spots.

Toronto 4/:7

[illegible]

[illegible]

[illegible] base [illegible] [illegible]

[illegible] Hindwings [illegible] [illegible]

Loc. [illegible] Cooke [illegible] Kuranda [illegible]

[illegible] 1895.

Th[illegible] [illegible]

[illegible]

[illegible]

[illegible] visible.

[illegible]

[illegible]

Richmond R. 5.9.11

Toronto 4/17 Daylesford V. (RM42) 8.9.17

Toronto N.S.W. (W.D.F.)

Orbost Sept 1916 (P. Shannon)

Port Macquarie 3.4/1918 Toronto 4/17 Urunga (W) Oct 1920

195. **Delias aganippe** Donovan. **Fig. 524, 525.**

Insects New Holland, pl. 29, 1805.

♂. Above. Forewing greyish white, towards base whitish: costa very narrowly, and termen, black: a large postcellular spot, white margined black: a series of outwardly pointed subterminal spots, white. Hindwing white: termen black: a series of outwardly pointed subterminal spots, white with the scarlet of the undersurface faintly visible.

Beneath. Forewing white: costa narrowly, and termen, black: an irregular spot in area 1a at half, black: a postcellular spot, white broadly margined black: subterminal spots as above, but first and second from costa yellow. Hindwing black: costa at base, scarlet: an irregular central band, white, with a costal and a postcellular patch and a broad patch on dorsum, yellow: a series of subterminal spots, scarlet basally margined white.

♀. Above. Forewing white: costa narrowly, apex broadly, and termen, black: a spot in area 1a at half, and usually an elongate spot in area 2, black: a postcellular patch, enclosing a double black spot, white: subterminal spots as in male but dusted black. Hindwing white: termen broadly black: subterminal spots as in male but dusted black.

Beneath as in male: often an irregular spot in area 2 of forewing, black.

Loc. Emerald 9. Brisbane 9. Newcastle. Sydney 1 2 9 10. Blue Mts. 4 9 10. Colo Vale 2. Mt. Hotham 1. Wandin 2. Mordialloc 1. Melbourne 10 12. Gisborne 1 2 3 4 9 10. Macedon 12. Castlemaine 2 9 10. Dimboola. Adelaide. Perth. Menzies. Beverley 12. Geraldton 11. 25♂ 23♀.

This species occurs throughout the whole of southern Australia, and sparingly as far north as the tablelands of central Queensland. We have taken the larvae feeding gregariously on native cherry: they do not form a web like those of *harpalyce*, but pupate singly, attaching themselves to the twigs and branches, and even the trunk of the foodtree. Upon their favourite foodplant, *Loranthus linophyllus*, both larvae and pupae are sometimes to be taken in abundance.

196. **Delias harpalyce** Donovan. **Fig. 518, 519.**

Insects New Holland, pl. 18, f. 1, 1805.

♂. Above. Forewing greyish white: costa very narrowly, and termen, black: a series of subterminal spots, greyish white. Hindwing greyish white: termen black.

Beneath. Forewing grey dusted black: termen broadly black: a series of large subterminal spots, yellow. Hindwing grey dusted black: termen black with veins grey: base black with a subcostal spot scarlet: a band of discal spots, scarlet basally edged black.

♀. Above. Forewing grey: costa narrowly, and termen very broadly, black: a series of subterminal spots, cream. Hindwing grey: termen broadly black.

Beneath as in male: grey areas darker: subterminal spots of forewing deeper yellow.

Loc. Sydney 4 9 10 11 12. Blue Mts. 10. Moruya 3 9. Mt. St. Bernard 1 2. Sale 10. Wandin 1 2 10. Frankston 2 9. Melbourne 2 8 9. Gisborne 8 11. Mansfield 11. Perth. 20♂ 19♀.

This species is confined to southern Australia. The larvae feed gregariously, and when about half grown spin a large silken web over the leaves and twigs of the foodplant, and upon this web they pupate: the pupae are intensely black.

197. **Delias nigrina** Fabricius. **Fig. 521, P. 521.**

Systema Entomologiae, p. 475, 1775.

♂. Above. Forewing greyish white: costa very narrowly, and apex, black: a series of obscure subapical spots, greyish white. Hindwing greyish white: termen narrowly lined black.

Beneath. Forewing black: dorsum grey: a series of large subapical spots, yellow. Hindwing black dusted grey: a large elongate subcostal spot near base, scarlet: a band of narrow discal spots, scarlet edged black.

♀. Above. Forewing black: base and dorsum dusted grey: a series of obscure subapical spots, greyish white. Hindwing black: base dusted grey.

Beneath as in male.

Loc. Cape York 10 11. Cairns 6 7. Kuranda 1 2 4 5 6 7 12. Ingham 5 9. Brisbane 5 6. Richmond R. 1 3 4 9 10 12. Kempsey 8 9. Port Macquarie 10. Manning R. 3. Ourimbah 4. Sydney 2 3 4 8 9 10 12. Illawarra 1 3 5 12. Blue Mts. 4 10. 41♂ 35♀.

This species occurs along the whole of the eastern coastline, sometimes in great abundance.

198. **Delias mysis** Fabricius.

Subspecies occur in New Guinea, the Aru Islands, and elsewhere.

198a. **D. mysis mysis** Fabricius. **Fig. 523.**

Systema Entomologiae, p. 475, 1775.

♂. Above. Forewing white: costa very narrowly, and apex, black: a series of subapical spots, white. Hindwing white: termen black: scarlet band of undersurface faintly visible.

Beneath. Forewing as above: costal spot of subapical series, pale yellow. Hindwing white: base and dorsum broadly yellow: termen broadly black with a band of subterminal spots, scarlet, usually extending broadly beyond vein 7.

♀. Above. Forewing white: base dusted black: costa narrowly, apex and termen broadly, black: a series of subapical spots, white. Hindwing white: termen broadly black: scarlet band of undersurface faintly visible.

Beneath. Forewing as above: base faintly yellow: subapical spots as above, but first and second from costa pale yellow. Hindwing white: base and dorsum broadly yellow: termen very broadly black with a band of subterminal spots, scarlet, usually extending broadly beyond vein 7.

Loc. Cairns 6 7 9 10. Kuranda 1 2 3 4 5 6 7 8 9 10 11 12. Atherton 4. Ingham 5 9. Mackay 2 3 4. 24♂ 18♀.

This subspecies is confined to northern Queensland. We have an aberrant female from Kuranda (Dodd), in which the subterminal band of hindwing beneath is pale yellow instead of scarlet.

198b. **D. mysis oestiva** Butler. **Fig. 522.**

Annals Magazine Natural History 1897, p. 159.

♂. Above. Forewing white: costa very narrowly and apex narrowly, black: a series of large subapical spots, white. Hindwing white: termen narrowly black: scarlet band of undersurface faintly visible.

Beneath. Forewing as above: costal spot of subapical series, pale yellow. Hindwing white: base and dorsum broadly pale yellow: termen black, with a narrow band of subterminal spots, scarlet, rarely extending beyond vein 7, and then as a narrow marginal streak only.

♀. Above. Forewing white: costa narrowly, apex and termen, black: a series of large subapical spots white. Hindwing white: termen black: scarlet band of undersurface faintly visible.

Beneath. Forewing as above: base broadly pale yellow: subapical spots as above, but first and second from costa pale yellow. Hindwing white: base and dorsum broadly pale yellow: termen broadly black, with a narrow band of subterminal spots, scarlet.

Loc. Cape York 5 7 8 9. Claudie R. 1 3 11. Coen 12. Darwin 8 9. 7♂ 2♀.

This is the northwestern race of *mysis*, and not as Butler suggested the dryseason form. Butler's specimens came from Darwin and Port Essington: examples from Cape York are almost identical, but to the south they gradually merge into *mysis mysis*.

199. **Delias nysa** Fabricius.

This species is confined to Australia and appears to have no very close ally, though from some subspecies of *D. momea* (Java), it is said to be scarcely distinguishable above.

199a. **D. nysa nysa** Fabricius. **Fig. 531, 532, 535.**

Systema Entomologiae, p. 473, 1775.

♂. Above. Forewing greyish white: costa narrowly and apex, dusted black: a spot at lower end of cell, black: a series of irregular subapical spots, greyish white. Hindwing greyish white: termen lightly dusted black, with traces of a series of terminal spots, greyish white.

Beneath. Forewing greyish white: costa narrowly, and outer area, black, with apex brown: base yellow: an irregular incomplete double series of subapical spots, greyish white. Hindwing dark silky brown: costa at base narrowly yellow: a dot at end of cell, greyish white: a complete series of small subterminal spots, yellow margined black.

Maclay (ANB) 10.

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[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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Port Macquarie 3.6/1912 Toronto 4/-

♀. Above. Forewing greyish white: base dusted grey: costa narrowly and apex broadly, black: a series of small subapical spots, greyish white. Hindwing grey, sometimes dusted black: termen irregularly black with a series of irregular terminal spots or streaks, greyish white.

Beneath. Forewing with base broadly yellow: dorsum greyish white: outer area black with apex brown: a series of subapical spots, greyish white. Hindwing as in male.

Loc. Cairns 10. Kuranda 3 4. Atherton 12. Herberton 12. Mackay 5. Rockhampton. Brisbane 5 6. Esk. Blackbutt 1. Richmond R. 1 2 3 4 5. 9.10 Grafton 12. Bellingen 10. Port Macquarie 10. Manning R. 3. Ourimbah 4. Sydney 2 4. Illawarra 1 3 4 12. Blue Mts. 3. 23♂ 23♀.

The figures illustrating this subspecies are all somewhat too dark. It occurs most abundantly in southern Queensland, and but sparingly around Sydney.

199b. **D. nysa nivira** nov.

♂. Above. Forewing greyish white: costa narrowly, and apex, dusted black: a spot at lower end of cell, black: a series of large irregular subapical spots, greyish white. Hindwing greyish white: termen lightly dusted black, with traces of a series of subterminal spots, greyish white.

Beneath. Forewing white: costa narrowly and apex broadly, black: base orange-yellow: an irregular incomplete double series of subapical spots, greyish white. Hindwing silky black: costa at base narrowly orange-yellow: a dot at end of cell, white: a complete series of subterminal spots, orange-yellow.

♀. Above. Forewing greyish white: base dusted grey: costa narrowly and apex broadly, black: a series of subapical spots, greyish white. Hindwing black: base dusted grey: a series of faint terminal dots, greyish white.

Beneath. Forewing with base broadly orange-yellow: dorsum greyish white: outer area black with a series of subapical spots, greyish white. Hindwing as in male.

Loc. Coen 10 11. 6♂ 2♀.

200. **Delias ennia** Wallace. (Waigiou).

This species occurs in New Guinea and the adjacent islands.

200a. **D. ennia nigidius** Miskin. **Fig.** 529, 530, 534.

Transactions Entomological Society London 1884, p. 93.

♂. Above. Forewing white: costa narrowly and apex, black: a series of small subapical spots, white. Hindwing white: termen narrowly black, with a series of terminal spots, sometimes reduced to faint dots, whitish.

Beneath. Forewing as above: subapical spots larger and first and second from costa pale yellow. Hindwing white: base and dorsum yellow: termen black, with a series of large terminal spots, yellow.

♀. Above. Forewing white: costa, apex and termen, broadly black: a series of small subapical spots, white. Hindwing grey: termen broadly black, with sometimes a series of terminal dots, whitish.

Beneath. Forewing as above: subapical spots larger, and those near costa, pale yellow. Hindwing black: costa broadly white: base and dorsum dusted yellow: a series of large terminal spots, yellow.

Loc. Coen 11. Cairns 6. Kuranda 1 2 3 4 5 6 7 12. Herberton 1. 22♂ 25♀.

This subspecies is confined to northern Australia. A single male from Coen has the terminal spots of hindwing beneath larger and of a decidedly orange colour.

201. **Delias aruna** Boisduval. (New Guinea).

The typical form has a large scarlet central area on hindwing beneath.

201a. **D. aruna inferna** Butler. **Fig.** 528, 537.

Lepidoptera Exotica, p. 63, pl. 24, f. 6, 1871.

♂. Above. Forewing cadmium yellow (floury orange): costa very narrowly and apex, black. Hindwing cadmium yellow: dorsum greyish yellow: termen lined black.

Beneath. Forewing black: dorsum narrowly greyish: an obscure narrow streak along subcostal, and an irregular bar on discocellulars, yellow. Hindwing black: a broad subcostal streak at base, scarlet.

♀. Above. Forewing black: basal area dusted yellow: a patch in end of cell and on discocellulars, cadmium yellow. Hindwing black: basal area dusted yellow: dorsum greyish yellow.

Beneath. Forewing as in male: yellow bar on discocellulars broader. Hindwing as in male.

Loc. Cape York 5 6 10 11 12. Banks Is. 2. Claudie R. 11. 16♂ 10♀.

Some of the females show a series of yellowish discal spots on forewing beneath. In Australia this species is confined to the extremity of Cape York and is never abundant. We have a cluster of empty pupae cases attached to a broad mistletoe leaf: they closely resemble those of *nigrina,* and show that the larvae are gregarious.

Genus **ELODINA** Felder.

Reise Novara Lepidoptera, i, p. 215, 1865.

Antennae about half the length of costa. Forewing with vein 11 from subcostal onefourth before end of cell: vein 10 from vein 7 a little beyond end of cell: vein 9 and vein 8 absent: vein 6 from vein 7 nearer to apex than to vein 10: vein 5 from cell very close to apex of cell. Hindwing with precostal spur: vein 6 sometimes slightly stalked with vein 7. Pupa pointed at the head, but without dorsal or lateral spines.

Type. *Elodina egnatia* Godart, from the Moluccas.

Foodplant. *Capparis.*

This genus is confined to the eastern portion of the Indo-Australian Region. All the species are variable, both geographically and seasonally, and in general appearance they resemble each other so closely that we have thought it needful to compile a key for the Australian species.

Key to the Species of *ELODINA.*

A. Forewing beneath with a subapical patch of dark scales.
  a. Forewing much narrower than in *b.* .... *padusa.*
  b. Forewing much broader than in *a.* .... *angulipennis.*
B. Forewing beneath without a subapical patch of dark scales.
  a. Hindwing beneath silky white or cream .... *perdita.*
  b. Hindwing beneath usually much darker than forewing .... *parthia.*

In *angulipennis* vein 5 and vein 6 of forewing arise from almost the same point, while in *parthia* these veins are distinctly separate at base.

202. **Elodina parthia** Hewitson. **Fig. 498, 499.**

Exotic Butterflies, i, pl. 2, f. 12, 13, 1853.

♂. Above. Forewing chalky white: costa narrowly brownish: apex dark brown, and strongly toothed on inner edge. Hindwing chalky white.

Beneath. Forewing white: base orange: costa lined pale brown: apex variably pale brown. Hindwing dull white, often covered with pale brown striae: a series of obscure discal streaks, pale brown.

♀. Above and Beneath as in male: termen of forewing more convex.

Loc. Claudie R. 11. Coen 11. Kuranda 1 2 6 7. Mackay 3 8. Duaringa. Emerald. Brisbane 4 5 6 9 10. Stradbroke Is. 12. Blackbutt 1. Richmond R. 1 2 4 5 9to12. Nambucca 1. Port Macquarie 10. Manning R. 3. Sydney. 37♂ 11♀.

The hindwing beneath is very variable, sometimes being nearly white, and often much darker than in figure. Pseudomelanic examples sometimes occur: they do not show extensions of the dark apical area, but patches of dark scales occur irregularly on the wings. These patches may appear upon both left and right wing, but when they do so they do not correspond in extent, shape or position: they occur both above and beneath, but usually on the one surface only.

203. **Elodina egnatia** Godart. (Moluccas).

203a. **E. egnatia angulipennis** Lucas. **Fig. 493, 494.**

Revue et Magazine Zoologie Paris, p. 431, 1852.

♂. Above. Forewing pearly white: base and costa narrowly brownish black: apex brownish black, and strongly toothed on inner edge. Hindwing pearly white.

Beneath. Forewing silky white, sometimes tinged cream: base faintly pale yellow: costa narrowly brownish black: a subapical area, brownish black. Hindwing silky white, sometimes tinged cream: costa at base narrowly yellow: usually a faint dot at end of cell, and a series of faint discal dots, brown.

[illegible] yellow [illegible] grayish yellow.

[illegible] and a [illegible] We [illegible] they [illegible]

[illegible] portion of the [illegible]

[illegible] FLORIDA

[illegible] dark [illegible]

[illegible] than foregoing [illegible]

[illegible] Petrarellies, i. pl. 2, f. 12, 13 [illegible]

[illegible] brown striae [illegible] a series of [illegible]

[illegible] Duaringa [illegible]

[illegible] do not [illegible]

[illegible] Zoological [illegible]

[illegible] nearly [illegible]

♀. Above as in male: termen of forewing more convex.

Beneath as in male: subapical area of forewing sometimes reaching to costa, and along termen to vein 3: discal dots of hindwing usually clearer.

Loc. Cape York 2 3 4 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Murray Is. 8. Claudie R. 11 12. Coen 11. Cooktown 10 11. Kuranda 6 10 11. Mackay 1 3 4 5. Brisbane 4 5 6 7 10. Esk. Blackbutt 1. Richmond R. 4 5 9 10. Nambucca 9. Kempsey 9. Port Macquarie 10. Manning R. 3. Sydney 1 12. 90♂ 40♀. Port Macquarie 4/1918

The dark basal area of forewing is paler than shown in figure. The inner margin of the dark area in apex of forewing is always toothed, sometimes more and sometimes less strongly than in figure, and the dark area never reaches the tornus. The subapical patch of forewing beneath is always distinct, is rarely smaller than shown in figure, and sometimes, especially in the female, is larger. The hindwing beneath is sometimes without the dark discal dots, but in some females these are much larger than shown in figure.

A long and very constant series from Prince of Wales Is. shows the dark apical area above broader, the tooth on inner edge blunter, and the inner edge between the tooth and vein 3 without the usual shallow double indentation. The butterflies of this series are rather larger than the average, and appear to be nearer typical *egnatia* than those of the mainland.

204. **Elodina padusa** Hewitson. **Fig. 495.**

Exotic Butterflies, i, pl. 2, f. 10, 11, 1853.

♂. Above. Forewing chalky white: costa narrowly brownish black: apex broadly brownish black, and toothed on inner edge: termen narrowly brownish black. Hindwing chalky white.

Beneath. Forewing silky white: base lemon yellow: costa greyish: a subquadrate subapical patch, blackish. Hindwing creamy white: costa at base narrowly orange.

♀. Above and Beneath as in male: termen of forewing more convex.

Loc. Armidale. Sydney 1 11. Dimboola. Roebourne. Derby. 3♂ 2♀.

This species is easily recognised by the very narrow forewing, and the extension of the dark apical area to the tornus. Our five examples show very little variation, but we anticipate that a long series would probably include specimens with some trace of dark discal dots on hindwing beneath.

This is the only species of the genus found so far south as Victoria: we have never seen more than a single specimen upon the wing at one time, though we have often noticed dozens of both *parthia* and *angulipennis*. *E. quadrata* Butler is a synonym.

205. **Elodina perdita** Miskin.

In this species the inner edge of the dark apical area of forewing is barely toothed, the subapical dark patch of forewing beneath is absent, and the apex of forewing is rounded.

205a. **E. perdita perdita** Miskin. **Fig. 496, 497.**

Proceedings Royal Society Queensland 1889, p. 263.

♂. Above. Forewing white: base broadly and costa narrowly, brownish: apex brownish black. Hindwing white.

Beneath. Forewing white: base faintly yellow. Hindwing white: sometimes traces of a series of discal dots, brown.

♀. Above as in male.

Beneath. Forewing white: base faintly yellow. Hindwing silky cream: a faint series of discal dots, brown.

Loc. Cooktown 10 11 12. Townsville 3 4 5. 25♂ 9♀.

205b. **E. perdita walkeri** Butler.

Annals Magazine Natural History 1898, p. 294.

♂. Above. Forewing white: base and costa brownish black: apex brownish black. Hindwing white.

Beneath. Forewing white: base orange: costa brownish black. Hindwing white: sometimes traces of a series of discal dots, brown.

♀. Above and Beneath as in male.

Loc. Baudin Is. 5 6. Wyndham 3. Daly R. 4. Darwin 2 3 4 8 10 11 12. 21♂ 11♀.

This is the western race of *perdita*. It differs in its smaller size. We have a specimen of the original series taken at Darwin by J. J. Walker. Butler also described *baudiniana* from Baudin Is., and we have two examples of the original series, taken there by J. J. Walker, but do not consider this can be maintained even as a geographical race.

Genus **ANAPHAEIS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 93, 1816.

Antennae about half the length of costa. Forewing with vein 11 from subcostal onefourth before end of cell: vein 11 anastomosing with vein 12: vein 10 from subcostal well before end of cell: vein 9 from vein 7 near apex: vein 8 absent: vein 6 from vein 7. Hindwing with precostal spur. (**Fig. AE**). Pupa pointed at the head, and with very slight lateral projections.

TYPE. *Anaphaeis creona* Cramer, from Africa.

FOODPLANT. *Capparis*.

The anastomosis of vein 11 and vein 12 of forewing distinguishes this from all other Australian genera of the family: in occasional specimens these veins separate again before reaching costa. The allied African genus *Belenois* differs in having the costa of the forewing serrated.

206. **Anaphaeis java** Sparrman. (Timor).

206a. **A. java teutonia** Fabricius. **Fig. 500, 501, 502, L. 500, P. 500.**

Systema Entomologiae, p. 474, 1775.

♂. ABOVE. Forewing chalky white: a dot at lower end of cell, black: apex and termen black, with a series of elongate subterminal spots, white. Hindwing chalky white: termen black, with a series of subterminal spots, white.

BENEATH. Forewing chalky white: base of cell faintly orange: a broad line along subcostal and a bar on discocellulars, black: termen black, with subterminal spots as above but larger. Hindwing chalky white with veins heavily black: costa and dorsum streaked orange: termen black, with subterminal spots as above, but larger and streaked orange.

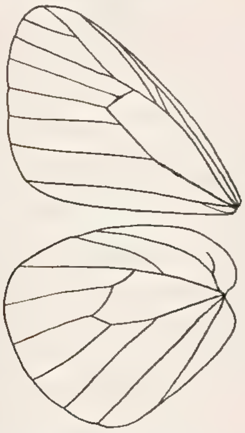

Fig. AE. Wing venation of *Anaphaeis teutonia.*

♀. ABOVE. Forewing chalky white, sometimes tinged cream: apex and termen very broadly black, with sometimes a series of obscure elongate subterminal spots whitish. Hindwing chalky white, sometimes tinged cream: termen very broadly black, with sometimes a series of very obscure subterminal spots, whitish.

BENEATH. Forewing as in male: termen broadly black and base broadly orange: subterminal spots streaked pale orange. Hindwing as in male: termen and veins very broadly black: orange streaks of subterminal spots, broader.

LOC. Cape York 3. Lloyd Is. 1. Coen 12. Cairns 2 9. Kuranda 12. Atherton 1 7 12. Ingham 5 9. Mackay 2 3 4 11 12. Brisbane 4 5 6 7 10. Esk 2. Blackbutt 1. Mt. Tambourine 12. Richmond R. 1 5. Grafton 12. Nambucca 9. Manning R. 3. Sydney 1 10 11 12. Illawarra 1 12. Blue Mts. 11. Melbourne 1 2 3 4 10 11.12 Wandin 10. Gisborne 3 9 10 11 12. Macedon 11 12. Castlemaine 3 10 11 12. Kerang. Dimboola 11. Adelaide 11. Macdonnell Ranges. Perth. Monte Bello Is. 6. Broome 5. Derby. Wyndham 5. Daly R. 4. Darwin 8. 29♂ 41♀.

Brisbane Nov 15. (RI) Richmond R. 2.3.9.10.

Melbourne Dec 1916 (V.Nat. Jan 1917 FGB) Toronto (WDF)

This is one of the best known of the Australian butterflies, on account of its wide range, conspicuous colour, and migratory habit. For days at a time countless numbers may be seen, all flying in the one direction: we have records of large flights in Sydney in January 1894 and November 1909, and in Gisborne in November 1905 and November 1907. + Dec. 1916. (6.12.16 — 15.12.16

It is a somewhat variable butterfly, and has received many names. The typical *teutonia*, as figured by Donovan, is a male of the usual form like **fig. 500**, and Macleay renamed this *niseia*. Donovan named the dark form of the female like **fig. 502**, *clytie*: our **figure 501** is a still darker example with no traces of white subterminal spots above. Another female form sometimes occurs which is very like the normal male, but has a broad black bar on discocellulars of both wings. The form, described by Donovan as *deiopeia*, we do not regard as Australian.

206aa. **A. java teutonia, f. peristhene** Boisduval. **Fig.** 485 572

Bulletin Societie Entomologique France 1859, p. clv, n. 4.

♂. Above. Forewing chalky white: a dot at lower end of cell, black: apex and termen broadly black, with a series of subapical streaks, whitish. Hindwing greyish white: a bar at end of cell, black: termen broadly black, with a series of subterminal spots, near apex, white.

Beneath. Forewing as above: basal half of cell, orange: a line along subcostal, and a spot at lower end of cell, black: a series of broad subapical streaks, white. Hindwing black: dorsum white streaked orange: costa at base narrowly orange: a complete series of subterminal spots, orange.

♀. Above. Forewing cream: costa narrowly, apex and termen very broadly, black, with a series of obscure subapical streaks, whitish. Hindwing cream: termen very broadly black.

Beneath. Forewing as above: basal area orange: a series of broad subapical streaks, cream. Hindwing as in male.

Loc. Percy Islands 1. 3♂ 1♀.

This form is an extreme-melanic variation of *java*, which occurs at many points in the eastern range of that species, sometimes even predominating. It is very rare in Australia, and we have not yet seen an authentic specimen from the mainland.

Genus **HUPHINA** Moore.

Lepidoptera of Ceylon, 1, p. 136, 1881.

Antennae slightly less than half the length of costa. Forewing with vein 11 from subcostal one-fourth before end of cell: vein 10 from subcostal well before end of cell: vein 9 from apical third of vein 7: vein 8 absent: vein 6 from vein 7. Hindwing with precostal spur. Pupa pointed at the head, and with a lateral spike on each side.

Type. *Huphina coronis* Cramer, from India.

Foodplant. *Capparis.*

This genus is allied to *Appias*, but the costa of forewing is more strongly arched and the apex less acute, while the abdominal hair tufts peculiar to *Appias* are absent. The single Australian species exhibits marked seasonal dimorphism.

207. **Huphina perimale** Donovan. (Norfolk Is.)

The earliest name for this group of *Huphina* is *Papilio perimale* Donovan, described in Insects of New Holland, but the butterfly there figured is not Australian. Previous writers have supposed that it came from New Caledonia, but we have specimens from Norfolk Island agreeing exactly with Donovan's figure. As Donovan described other Norfolk Island butterflies as Australian, the origin of *perimale* can no longer be doubted.

207a. **H. perimale scyllara** Macleay. **Fig. 471, 472, 473.**

King's Survey of Australia, ii, Appendix, p. 459, 1827.

♂. Above. Forewing white: costa narrowly and termen, brown-black: base and costa dusted brown: an incomplete series of irregular subterminal spots, white. Hindwing white: termen brown-black with an incomplete series of irregular and often obscure subterminal spots, white.

Beneath. Forewing white: termen broadly brown with apex red-brown: costa narrowly red-brown: an incomplete series of obscure subterminal spots, whitish, those near apex often pale yellow, or brownish yellow. Hindwing very variable, white, pale yellow, or brownish yellow: termen red-brown, with a very incomplete series of obscure subterminal spots, whitish.

♀. Above as in male: dark termen broader and subterminal spots more obscure.

Beneath as in male: dark termen broader.

Loc. Cape York 4 5 8 9 11. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Murray Is. 9. Forbes Is. 12. Cooktown 1 10 11 12. Cairns 6. Kuranda 3 6 12. Atherton 9. Stannary Hills 7. Ingham 9. Mackay 1 2 3 4 5 11. Brisbane 4 5 10. Blackbutt 1. Richmond R. 2 3. Grafton 12. Manning R. 3. Moree 5. Derby. Daly R. 4. Darwin 8 9 10 11 12. 103♂ 61♀.

207aa. **H. perimale scyllara, f. narses** Wallace. **Fig. 474.**

Transactions Entomological Society London 1867, p. 333, pl. VI, fig. 3.

♂. Above. Forewing white: base and costa dusted brown: costa narrowly and termen broadly, brown-black: an incomplete series of irregular subterminal spots, white. Hindwing white: termen brown-black, with an incomplete series of irregular and often obscure subterminal spots, white.

Beneath. Forewing white: costa narrowly and termen broadly, dark brown. Hindwing uniformly dark brown: sometimes faint indications of termen broadly darker brown.

♀. Above as in male, but dark termen broader and subterminal spots more obscure.

Beneath as in male.

Loc. Kuranda 7 9. Mackay 5. Brisbane 4 5 6 7 8 9 10. Richmond R. 7. Derby. Darwin. 47♂ 26♀.

This is an abundant species in the northern half of Australia, with variable seasonal and intermediate forms, to which names have been applied. The variations are principally in the colour of the basal and central area of the hindwing beneath. The typical *scyllara* shows this area white, and all our examples come from Darwin: the type was no doubt taken within a hundred miles of that port. The most abundant form is *nabis* Lucas (**fig. 471, 473**), with yellow area, which is taken freely from January to May. The form with pale yellow-brown area (**fig. 472**), is *lanassa* Butler, and that with dark yellow-brown area, *periclea* Felder. The darkest form with the whole of the hindwing beneath earthy brown is described above, and is taken throughout June, July and August. The types of all these forms are from Australia. Though not strictly confined to their seasons, *nabis* and *lanassa* are most abundant in the wetseason and *narses* in the dryseason, while *periclea* is an intermediate form: typical *scyllara* appears to be confined to the northwest.

207b. **H. perimale latilimbata** Butler.

Annals Magazine Natural History 1876, p. 247.

♂. Above. Forewing white: costa narrowly and termen, brown-black: two subterminal spots near apex, white. Hindwing white: termen brown-black.

Beneath. Forewing white: costa narrowly and termen, brown: basal half of cell, yellow: two subterminal spots near apex, yellow. Hindwing yellow: termen broadly brown.

♀. Above as in male, but pale sulphur yellow instead of white.

Beneath as in male: basal yellow of forewing broader: hindwing deeper yellow.

Loc. Darnley Is. 12. Stephen Is. 12. 3♂ 2♀.

Butterflies of this genus from Darnley Is., as might be expected, show a much closer relationship with *latilimbata* of New Guinea, than with *scyllara*: as compared with *scyllara*, they have narrower dark margins, and fewer pale spots within the margins. Murray Is. examples are intermediate, but do not appear sufficiently distinct to justify their separation from *scyllara*.

Genus **APPIAS** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 91, 1816.

Antennae slightly more than half the length of costa. Forewing with vein 11 from subcostal one-fourth before end of cell: vein 10 from subcostal well before end of cell: vein 9 from apical third of vein 7: vein 8 absent: vein 6 from vein 7. Hindwing with precostal spur. Pupa pointed at the head and with a lateral spike on each side.

Type. *Appias zelmira* Cramer, from India.

In this genus the apex of the forewing is acute in both sexes, and the male has brushes of stiff hairs at the extremity of abdomen beneath.

?Wandin 7.117. (A.N. Burns)

Richmond R 10 11.

[illegible] F. Bush [illegible]

[illegible] 1887, p. [illegible]

[illegible] 1877, with p. [illegible]

[illegible] pelvica is on [illegible]

[illegible] compared with specimens, they have [illegible]

[illegible] in both sexes [illegible] has been [illegible]

208. **Appias ada** Cramer. (S. Moluccas).

This species ranges from the Moluccas to the Solomons, and only a very few examples have been taken in Australia.

208a. **A. ada caria** nov. **Fig. 475, 533, 788.**

♂. Above. Forewing white: costa, apex, and termen irregularly to vein 2, narrowly brown-black: a large subapical spot, cream. Hindwing white: termen narrowly and irregularly brown-black.

Beneath. Forewing white: costa broadly and apex narrowly, brown: subapical spot yellow. Hindwing yellow, shading to orange towards termen: costa narrowly white: termen broadly brown.

♀. Above. Forewing white: costa broadly, apex and termen narrowly, brown. Hindwing white: termen brown.

Beneath. Forewing as in male: subapical yellow spot obscure. Hindwing as in male.

Loc. Cape York (Ducie R.) 7. Claudie R. 1 11 12. Johnstone R. 4♂ 6♀.

This subspecies approaches somewhat the Aru Is. race, but the dark margins above are much narrower than in any of the many subspecies of *ada* in our collection. When describing *herennia*, the race of *ada* from British New Guinea, Fruhstorfer added Cairns as a locality. We have examples of two races from New Guinea, but our Australian specimens agree with neither, so we doubt the accuracy of Fruhstorfer's Australian locality.

The figures are from our own two specimens which are of less than average size.

209. **Appias paulina** Cramer. (Ceylon).

209a. **A. paulina ega** Boisduval. **Fig. 488, 489, 490, 491.**

Species General des Lepidopteres, p. 536, 1836.

♂. Above. Forewing white: costa narrowly lined and dusted brown: apex very narrowly black, with two subapical spots in areas 3 and 5, black. Hindwing white.

Beneath. Forewing white: costa and apex lined black: apex yellow: subapical spots as above but brown. Hindwing yellow of a uniform colour but varying shade.

♀. Above. Forewing white: costa narrowly, apex broadly, and termen to area 1a, black: a series of three or four subapical spots, white. Hindwing white: termen broadly black.

Beneath. Forewing white: cell lemon yellow: margins as above but brown, and apex suffused lilac-brown: subapical spots as above but smaller. Hindwing varying from yellow to orange: termen very broadly brown suffused lilac-brown.

Loc. Thursday Is. 5. Banks Is. 2. Coen 12. Cooktown 11. Cairns 6 9 10 11. Kuranda 2 3 6 8 10 12. Ingham 5. Mackay 1 2 3 4. Brisbane. Stradbroke Is. 12. Esk 2. Blackbutt 1. Mt. Tambourine 12. Richmond R. 1 2 3 5 to 11. 12. Manning R. 3. Sydney 1 2 12. Moruya 1. Pambula 12. Melbourne. Darwin 8 9 12. 31♂ 29♀. Toronto 4/17. Port Macquarie 3.4/1915. Moe V. (Coo) Jan 1916.

The most widely ranging species of the genus, occurring from Cape York to southern N. S. Wales, with an occasional straggler into Victoria. An aberrant female from Mackay has almost the whole of the hindwing beneath, brown, base and dorsum only being obscurely yellow. We have examples from New Caledonia, Loyalty Islands, and Lord Howe Is. Fruhstorfer wrongly identifies this sub-species as *melania* Fabricius, in Seitz' Macrolepidoptera, *Pieridae*.

210. **Appias albina** Boisduval. (Amboina).

210a. **A. albina albina** Boisduval. **Fig. 784, 787, 793.**

Species General des Lepidopteres, p. 480, 1836.

♂. Above. Forewing white: termen narrowly lined brown. Hindwing white.

Beneath. Forewing white: apex faintly yellow. Hindwing pale yellow.

♀. Above. Forewing white: costa, apex and termen, brown: base dusted brown: a series of subapical spots, white. Hindwing white: termen narrowly brown.

Beneath. Forewing white: base of cell yellow: an irregular subterminal band, corresponding with inner edge of dark apex and termen above, brown. Hindwing pale silky yellow.

Loc. Banks Is. 2 3. Darwin 3. 2♂ 9♀.

This is the first record of this species from within Australian limits: Aru Is. examples are identical.

211. **Appias melania** Fabricius. **Fig. 492, 503, 504.**

Systema Entomologiae, p. 475, 1775.

♂. Above. Forewing white dusted bluish grey: costa narrowly, apex and termen, black: a series of subapical spots, white dusted bluish grey. Hindwing bluish grey: apex obscurely and irregularly black.

Beneath. Forewing white: apical area brown with apex dusted paler: subapical spots as above but smaller: basal half of cell, dull orange. Hindwing brown dusted grey: costa at base, narrowly orange.

♀. Above. Forewing as in male: apex broadly black. Hindwing as in male: termen obscurely and irregularly, black.

Beneath as in male: cell of forewing and basal edge of costa of hindwing, bright orange. Hindwing often with a dark brown discal band.

Loc. Cooktown 11 12. Cairns 10 11. Kuranda 1 2 3 4 8 10 12. 34♂ 12♀.

Miskin described this species as *asteria*, and applied the name *melania* to the next species. Fruhstorfer redescribed this species as *cerussa*, having wrongly identified *ega* as *melania*.

212. **Appias celestina** Boisduval. **Fig. 483, 484.**

Voyage Astrolabe, Lepidoptera, p. 46, n. 1, 1832.

♂. Above. Forewing blue-grey: costa, apex and termen, narrowly dusted black. Hindwing blue-grey: termen very narrowly dusted black.

Beneath. Forewing pale blue-grey: apex and termen obscurely brown. Hindwing pale blue-grey: termen obscurely and very narrowly brown: costa at base narrowly yellow.

♀. Above. Forewing white: costa, apex and termen, broadly black: base broadly dusted blue-grey: a series of subapical spots, white. Hindwing white: termen broadly black: base and dorsum broadly dusted blue-grey.

Beneath. Forewing white: costa, apex and termen, broadly brown: base yellow dusted brown: subapical spots, reaching as a subterminal series to area 2, white. Hindwing white tinged yellow: termen broadly brown: costa at base narrowly yellow.

Loc. Cape York. 2♂ 1♀.

It is with considerable doubt that we include this species. We have records of only three examples all of which are supposed to have come from Cape York: none of them are dated, but we have no reason to doubt any other of Miskin's records. The male is figured from a specimen in the collection of Mr. Jas. A. Kershaw: the male and female in the Queensland Museum are both in damaged condition, the female so much so that we have had to use a New Guinea specimen for the figure. We are inclined to believe the Australian *melania* is a well defined race of this species, but so far we have no records of *melania* from further north than Cooktown.

Genus **CATOPSILIA** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 98, 1816.

Antennae stout, and much shorter than half the length of costa. Forewing with vein 11 from subcostal at about twothirds: vein 10 from subcostal close to end of cell: vein 9 from apical third of vein 7: vein 8 absent: vein 6 from vein 7. Hindwing with precostal spur feebly developed. (**Fig. AF**). Pupa pointed at the head, but without lateral spikes: wingcases produced to meet and touch, forming a slight ventral keel.

Type. *Catopsilia pomona* Fabricius.

Foodplant. *Cassia.*

This is a genus of robust strongflying butterflies, of rather more than medium size, occurring throughout the Indo-Australian Region. All the species exhibit marked dimorphism. The males have a ridge of long hairs, directed inwards, on the dorsum of the forewing beneath, and a patch of specialised scales between subcostal and base of vein 8 of hindwing above.

[illegible]

[illegible]

Much has been written concerning this genus, and the puzzling variations of its species, and, adopting modern views, we are recognising three species only as occurring in Australia. These all have a wide range, and many of their varying forms have been named as species.

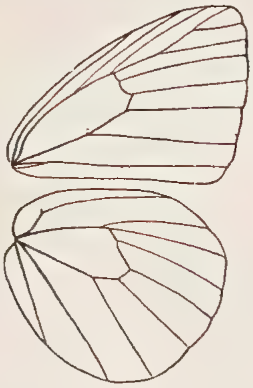

Fig. AF. Wing venation of *Catopsilia pythias.*

Photography has not been wholly successful in producing the plate illustrating this genus: the yellow colours are in every instance too dark. With the aid of our descriptions, there should however be no difficulty in determination.

Key to the Species of *CATOPSILIA.*

A. Wings with reddish brown striae beneath .... *pyranthe.*
B. Wings without reddish brown striae beneath.
  a. Wings concolorous above .... *pomona.*
  b. Wings not concolorous above .... *scylla.*

Many lepidopterists recognise more than these three species: a greater number might easily be listed, but with long series we are unable either to draw definite and constant parting lines, or to assign definite geographical limits. Not only do several of the differing forms of the one species occur at the same time and in the same place, but the sexes of differing forms have on several occasions within our own knowledge been taken paired, which goes far to prove their identity with each other.

In this connection we would suggest interesting breeding experiments possible to any careful lepidopterist resident in a locality where the butterflies of this genus are abundant. A small bush of *Cassia fistula*, the foodplant, should be isolated, and first very carefully searched to ensure that no eggs have already been deposited upon it: a full season's isolation would be best. A female *Catopsilia* should then be introduced, watched till she lay her eggs, and then killed, carefully labelled, and put aside for future comparison and reference. The larvae from these eggs should be carefully watched, and every one of the resultant butterflies (even each crippled or damaged specimen) should be killed and labelled for later comparison with the parent. We anticipate that examples of at least two forms of the one species would be bred from the one batch of ova. Only in this way can the accuracy of the classification we have adopted be proved.

213. **Catopsilia pyranthe** Linne. (India).

213a. **C. pyranthe pythias** nov. **Fig. 509.**

♂. ABOVE. Forewing chalky white tinged greenish: apex and termen narrowly black: a small spot on discocellulars, black. Hindwing chalky white: termen lined black.

BENEATH. Forewing white: costa and apex very broadly pale yellow-brown irrorated with red-brown striae: a small spot on discocellulars, red-brown centred paler. Hindwing pale yellow-brown irrorated with red-brown striae: a small spot on discocellulars, red-brown centred paler.

♀. ABOVE as in male: spot on discocellulars of forewing larger: apical and terminal margins much broader.

BENEATH as in male.

LOC. Kuranda 1 3 6. Atherton 1. Brisbane. Manning R. 3. Sydney 1 2 3 4. Blue Mts. 3. King Sound. 16♂ 10♀. Port Macquarie 3-4/1918 Richmond R. 1.2.

213aa. C. pyranthe pythias, f. lacteola nov. Fig. 510, 511.

♂. Above. Forewing chalky white: apex and termen very narrowly lined brown: a small spot on discocellulars, brown-black. Hindwing chalky white: termen very narrowly lined brown.

Beneath. Forewing white: costa and apex very broadly pale yellow-brown irrorated with red-brown striae: a small spot on discocellulars, red-brown centred paler. Hindwing pale yellow-brown irrorated with red-brown striae: a small spot on discocellulars, red-brown centred paler.

♀. Above and Beneath as in male: spot on discocellulars of forewing above, larger.

Loc. Kuranda 6 8. Mackay 3. Rockhampton. Duaringa. Brisbane. Manning R. 3. Moree 5. Narrabri 5. Ourimbah 4. Sydney 2 3 4 5. Blue Mts. 4. 28♂ 16♀.

In our own experience *pythias* and *lacteola* are usually taken together. Migratory flights always include both, so they are certainly neither seasonal nor geographical forms. We believe them to be dimorphs of the one species, but it is just possible they may be distinct: only breeding experiments, such as we have suggested, will definitely settle the point. The antennae of *pythias* are black, while those of *lacteola* are pinkish.

The type male of Butler's *lactea* is from the Solomon Islands, and the type female is from Queensland: therefore the male will carry the name *lactea,* from which the Australian form *lacteola* differs but slightly.

214. Catopsilia pomona Fabricius.

214a. C. pomona pomona Fabricius. Fig. 514, 515.

Systema Entomologiae, p. 479, 1775.

♂. Above. Forewing cream with base greenish yellow: apex very narrowly brown-black. Hindwing cream with base greenish yellow.

Beneath. Forewing cream tinged greenish or pinkish: apex and termen very narrowly pink: a spot on discocellulars, pink often centred silver: a narrow discal streak above vein 3, pink. Hindwing cream tinged greenish or pinkish: a spot on discocellulars, and often a smaller spot in base of area 5, pink often centred silver and faintly ringed brown: usually traces of a series of discal spots, pink.

♀. Above. Forewing dull whitish yellow: apex and termen narrowly brown-black: terminal dark margin usually interrupted at each vein: a spot on discocellulars, brown-black: traces of a series of discal spots, brown-black. Hindwing dull whitish yellow shading to yellow at termen: a dot on termen at each vein, brown-black.

Beneath. Forewing yellow: dorsum cream: apex and termen narrowly pink: a spot on discocellulars, pink often centred silver: traces of a discal series of spots, pink. Hindwing yellow: central spots as in male but larger: a series of discal spots, reddish.

Loc. Prince of Wales Is. 5 6. Banks Is. 2 3. Cairns 2 3 5 6 8 9. Kuranda 1 3 6 8 9. Atherton 3. Ingham 5. Townsville 6. Mackay 1 2 3 4. Rockhampton. Duaringa. Gayndah. Brisbane. Richmond R. 1 2.12.Sydney. Darwin 3 4 8 10 12. 38♂ 32♀. Toronto 4/17.

214aa. C. pomona pomona, f. crocale Cramer. Fig. 505, 506, 507.

Papillons Exotiques, i, pl. 55, f. C, D, 1775.

♂. Above. Forewing lemon yellow: apex and termen very narrowly brown-black. Hindwing lemon yellow.

Beneath lemon yellow: dorsum of forewing whitish.

♀. Above. Forewing lemon yellow: costa from base to end of cell, broadly brown-black: apex and termen, brown-black, often much broader than in figure: a spot on discocellulars, brown-black: a series of discal spots, brown. Hindwing lemon yellow: termen brown-black: rarely a series of irregular discal spots, brown.

Beneath silky yellow, often tinged pink: base of forewing orange: sometimes a small spot on discocellulars, pink: rarely traces of a series of faint irregular discal spots, brown.

Loc. Banks Is. 2 3. Cairns 2 3. Kuranda 1 4 8. Mackay 4. Rockhampton. Duaringa. Brisbane. Mt. Tambourine 12. Darwin 2 3 12. 20♂ 26♀.

Toronto 4/17 Richmond R 9.12

214ab. C. pomona pomona, ♀ f. catilla Cramer. Fig. 516.

Papillons Exotiques, iii, pl. 239, f. D, E, 1782.

♀. Above Forewing dull whitish yellow: apex and termen narrowly brown-black: terminal dark margin usually interrupted at each vein: a spot on discocellulars, brown-black: a series of discal spots, brown-black. Hindwing dull whitish yellow, shading to yellow at termen: a dot on termen at each vein, brown-black.

Beneath. Forewing yellow: dorsum whitish: a patch at end of cell, red-brown, with a variable spot on discocellulars, red-brown sometimes centred silver: a series of obscure discal streaks, red-brown: apex and termen faintly pink. Hindwing yellow: a large discal patch from vein 4 to vein 8, red-brown, with a spot on discocellulars, and a spot in base of area 5, brown centred silver: termen with a dot at each vein, red-brown.

Loc. Banks Is. 2. Cairns. Townsville 6 11. Mackay 1 8. Duaringa. Brisbane. Richmond R. 1. Sydney. Darwin 8. 12♀. Westwood ♀ (ANB) 12 [illegible]

214ac. C. pomona pomona, f. hinda Butler.

Lepidoptera Exotica, p. 31, pl. 12, f. 9, 10, 1870.

♂. Above. Forewing cream: apex very narrowly dusted brownish: a faint dot on discocellulars, brown. Hindwing cream.

Beneath. Forewing dull pink: dorsum cream: a small spot on discocellulars, pink centred paler. Hindwing dull pink: a small spot on discocellulars, pink centred paler.

♀. Above as in male: a dot on discocellulars of forewing, brown-black.

Beneath as in male.

Loc. Rockhampton. 1♂ 2♀.

We have described the typical forms of the species only: intergrades also occur. Mr. R. E. Turner captured a male *pomona* coupled with a female *crocale*: we have a male *crocale* and a female *pomona* which were taken paired: we would welcome further similar records. The antennae of *crocale* are black, and those of *pomona, catilla* and *hinda,* are pinkish.

215. Catopsilia scylla Linne. (Java).

215a. C. scylla gorgophone Boisduval. Fig. 508, 517.

Species General des Lepidopteres, p. 632, 1836.

♂. Above. Forewing chalky white: apex very narrowly brown-black: termen with a dot at each vein, brown-black: a small dot on discocellulars, brown-black. Hindwing pale yellow: termen sometimes with a minute dot on each vein, brown-black.

Beneath. Forewing deep yellow: dorsum cream: two dots on discocellulars and one above, brown-black: a series of discal spots, brown. Hindwing deep yellow: a spot on discocellulars, and a spot in base of area 5, brown-black sometimes centred paler: a pair of small spots in area 1a at about half, brown-black: a series of irregular discal spots, brown: termen with a dot on each vein, brown.

♀. Above. Forewing pale cream: apex and termen, brown-black: terminal dark margin sometimes interrupted at each vein: a spot on discocellulars, and a series of obscure discal spots, brown-black. Hindwing pale yellow: termen with a small spot, or dot, at each vein, brown-black.

Beneath as in male: spots on discocellulars larger and usually centred paler.

Loc. Cairns 6. Kuranda 8 9. Mackay. Rockhampton. Brisbane. Esk 2. Richmond R. 1 2 9.10. Manning R. 3. Illawarra 2. 17♂ 13♀. Port Macquarie 3/1918

215b. C. scylla etesia Hewitson. Fig. 512, 513.

Exotic Butterflies, IV, pl. 1, f. 5, 6, 1867.

♂. Above. Forewing chalky white: apex and termen, brown-black. Hindwing orange, with base and dorsum paler: termen with a small spot on each vein, brown-black.

Beneath. Forewing deep yellow: dorsum cream: a spot on discocellulars, brown-black centred pink: traces of a discal series of obscure spots, brown. Hindwing deep yellow: a spot on discocellulars, and a spot in base of area 5, brown centred pink: a pair of small spots, in area 1a at about half, brown: a series of irregular discal spots, brown: termen with a faint dot on each vein, brown. Hindwing sometimes without markings except the discocellular spots.

♀. Above. Forewing pale cream: apex and termen, brown-black: a series of obscure discal spots, brown. Hindwing yellow, towards base and dorsum paler: termen with a small spot on each vein, brown-black.

Beneath as in male: spots on discocellulars larger.

Loc. Cape York 4 5. Daly R. 4. Darwin 10. Tennants Creek. 6♂ 3♀.

The race *gorgophone* seems to be confined to Queensland and N. S. Wales, and *etesia* to Cape York and N. W. Australia. We have examples of *etesia* from Darwin that differ very little from *gorgophone*, but so far have no proof that typical examples of both forms occur in any one locality.

Genus **TERIAS** Swainson.

Zoological Illustrations, First Series, I, pl, 22, 1820-21.

Antennae less than half the length of costa. Forewing with vein 11 from subcostal onefifth before end of cell: vein 10 from subcostal just before end of cell: vein 9 present but vein 8 absent: vein 6 from vein 7. Hindwing without precostal spur. Pupa with pointed head, but without lateral spikes: wing cases produced to meet and touch, forming a strong ventral keel.

Type. *Terias hecabe* Linne, from China.

Foodplant. *Cassia.*

This genus of small sulphur yellow butterflies differs from the rest of the Australian *Pieridae* in the absence of the precostal spur of the hindwing, and therefore forms a connecting link with the *Lycaenidae*. The butterflies are all slenderly built, have a low weak flight, and in some localities are very abundant.

The species are separated into three groups by the presence and position of secondary sexual characters. These sexmarks are of two types. In the males of *virgo, sulphurata* and *indecisa,* they consist of silky grey scales upon both sides of the median vein of forewing beneath, and form a conspicuous and easily recognised character. In the males of *sana, herla,* and *lineata,* they consist of a patch of closely set, irregular, salmon-coloured scales below the median vein of forewing beneath, and a similar but smaller patch between vein 8 and subcostal of hindwing above. When present on both wings, those of the hindwing are the less conspicuous. By holding the set specimens against the light, these sexmarks may be easily discerned, as the yellow scales of the wing then intensify the darker scales of the sexmark.

Key to the Species of *TERIAS*.

A. Sexmark of male absent .... *zoraide.*
B. Sexmark of male on forewing only.
a. Dark terminal margins above, uniformly broad.................................. *virgo.*
b. Dark terminal margins above, uniformly narrow: three dots in cell of forewing beneath *indecisa.*
c. Dark terminal margins above irregular: two dots in cell of forewing beneath .... *sulphurata.*
C. Sexmarks of male on both wings.
a. Sexmark of greyish scales, above and below median vein of forewing beneath .... *smilax.*
b. Sexmark of salmon-coloured scales, below median vein of forewing beneath.
a^1. Concolorous beneath .... *sana.*
b^1. Not concolorous beneath.
a^2. Dark streaks of hindwing beneath, straight.................................. *lineata.*
b^2. Dark streaks of hindwing beneath, curved.................................. *herla.*

216. **Terias libythea** Fabricius. (India).

216a. **T. libythea zoraide** Felder. **Fig. 538, 539, 540.**

Reise Novara Lepidoptera, p. 213, 1865.

♂. Above. Forewing yellow: costa, apex broadly, and termen, brown-black: base dusted brown-black: costa towards apex often narrowly splashed yellow. Hindwing yellow: termen brown-black: base dusted brown-black.

Beneath. Forewing yellow: costa and termen sometimes narrowly lined pink: two dots on discocellulars, brown-black: apex and termen with a minute dot on each vein, brown-black. Hindwing yellow, often dusted with dark scales: termen sometimes narrowly lined pink: two dots on discocellulars, brown-black: a basal series of faint dots, brown-black: a series of faint irregular discal streaks, brown: termen sometimes with a minute dot at each vein, brown-black.

Port Macquarie 3.2./17 & Toronto 4.'17

Darwin (T.O.T.) Aug. 1917

♀. ABOVE as in male but paler: basal dustings of dark scales heavier.
BENEATH as in male but paler.

LOC. Cooktown 10. Cairns 6. Kuranda 1 2 3 6 12. Mackay 2 3 4 5 8 10 11. Brisbane 2 4 5 6 10. Richmond R. 1 3 4 5. 10 Sydney. Illawarra 4. Darwin 2 3. 66♂ 38♀.

This is a very abundant, widely distributed, and somewhat variable species. It is easily recognised by the absence of a sexmark in the male, by the dark dots at end of cell of forewing beneath, and by the minute yellow splashes often present near apex of forewing above. The dark termen of forewing above usually extends to tornus, but is sometimes cut off sharply at vein 2: the yellow cilia above are sometimes tinged pink.

Our examples of *libythea* from Assam and Ceylon are all more heavily dusted with dark scales.

217. **Terias candida** Cramer. (S. Moluccas).

This species is easily recognised by its sharply defined broad dark margins and by the absence of markings beneath.

217a. **T. candida virgo** Wallace. **Fig. 476.**

Transactions Entomological Society London 1867, p. 328.

♂. ABOVE. Forewing yellow: costa very narrowly, termen broadly and evenly, brown-black. Hindwing yellow: termen broadly and evenly, brown-black.

BENEATH. Forewing pale yellow: termen broadly and evenly, dark brown. Hindwing yellow: termen broadly and evenly, dark brown.

♀. ABOVE. Forewing pearly white: costa very narrowly, termen broadly and evenly, brown-black. Hindwing pearly white: termen broadly and evenly, brown-black.

BENEATH as in male.

LOC. Cape York 1 2 3 4 5 9 10 11 12. Claudie R. 1 12. Coen 10 11. 22♂ 32♀.

Our records are all from Cape York Peninsula. The sexmark of the male consists of a patch of silky grey scales on both sides of the median vein of forewing beneath. We do not consider that Australian specimens can be separated from the Aru race.

218. **Terias hecabe** Linne. (China).

218a. **T. hecabe sulphurata** Butler. **Fig. 545, 548, 549.**

Proceedings Zoological Society London 1875, p. 617.

♂. ABOVE. Forewing yellow: costa narrowly and apex broadly, brown-black: termen broadly brown-black with a large deep double indentation on inner edge between vein 2 and vein 4. Hindwing yellow: termen brown-black.

BENEATH. Forewing yellow: two dots in cell, and an elongate spot on discocellulars, brown: sometimes a subapical patch, red-brown: apex and termen usually with a minute dot on each vein, brown-black. Hindwing yellow: a series of faint basal dots, and an elongate spot on discocellulars, brown: sometimes a series of irregular discal streaks, brown: termen usually with a minute dot at each vein, brown-black.

♀. ABOVE as in male, sometimes paler and duller, and sometimes with a dusting of dark scales.
BENEATH as in male.

LOC. Cape York 3 4 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 12. Murray Is. 9. Lloyd Is. 1. Cooktown 1 10. Cairns 6. Kuranda 1 2 3 4 6 7. Ingham 5 9. Townsville 5 6. Mackay 1 2 3 4 5 8 9 10 11 12. Brisbane 2 4 5 6 8 9 10. Esk 2. Richmond R. 3 4 5 10. Port Macquarie 10. Manning R. 3. Ourimbah 4. Sydney 4 5. Wyndham 3 4 5 10. Daly R. 4. Darwin 2 3 5 11 12. Melville Is. 130♂ 77♀. Toronto 4/17 Port Macquarie 3.4/1918 Urunga (W) Oct 1920.

This is an exceedingly abundant, widespread, and variable race of *hecabe*. In India, and elsewhere in the tropics, examples marked as in **fig. 549** are supposed to represent the wetseason form, and those like **fig. 548** the dryseason form. In Australia these forms are not seasonal: on the Richmond R. we have captured fresh examples of both forms on the same day, and from other localities we have many examples of both forms taken in the same month.

The dark termen of the hindwing above is sometimes reduced to a series of minute dots marking the end of veins, and is sometimes even broader than in **fig. 545.** The hindwing beneath sometimes shows very faint traces only of the dark dots and streaks, and is sometimes more heavily marked than in **fig. 549.** The species is easily known by the deep indentation of the inner edge of terminal dark margin of forewing above. The sexmark of the male consists of a patch of silky grey scales upon both sides of the median vein of forewing beneath, and is almost identical with that of *candida.*

219. **Terias blanda** Boisduval. (Java).

219a. **T. blanda indecisa** Butler. **Fig. 786.**

Annals Magazine Natural History 1898, p. 78.

♂. ABOVE. Forewing yellow: costa lined black: apex brown-black, gradually diminishing to termen at vein 3, and then running narrowly and evenly to tornus. Hindwing yellow: termen narrowly brown-black.

BENEATH. Forewing yellow: three dots in cell and a faint elongate spot on discocellulars, brown: termen with a dot on each vein, brown. Hindwing yellow: a faint elongate spot on discocellulars, and a series of faint discal dots, brown: termen with a dot on each vein, brown.

LOC. Darnley Is. 12. 1♂.

It is with some doubt that we apply the name of the Moluccan race (which we have not seen) to our single Australian specimen, which agrees very well with Bingham's figure of *moorei.* It may be at once recognised by the three dark dots in cell of forewing beneath: the wings are distinctly longer and narrower than those of *sulphurata.* The sexmark consists of a patch of silky grey scales upon both sides of the median vein of forewing beneath.

220. **Terias smilax** Donovan. **Fig. 541, 542.**

Insects New Holland, pl. 20, f. 3, 1805.

♂. ABOVE. Forewing yellow: apex broadly and termen to vein 1a, brown-black: often traces of a faint dot on discocellulars, brown. Hindwing yellow: termen with a dot on each vein, brown-black.

BENEATH. Forewing pale yellow: a minute dot on discocellulars, brown: termen with a minute dot on each vein, brown-black. Hindwing pale yellow: sometimes a series of basal dots, and a series of faint discal streaks, brown: termen with a minute dot on each vein, brown-black.

♀. ABOVE and BENEATH as in male, but slightly paler.

LOC. Cape York 11. Cooktown 10. Kuranda 6. Mackay 3 4 5 6 8 10 11. Duaringa. Brisbane 4 5 10. Stradbroke Is. 10 12. Richmond R. 5. Manning R. 3. Moree 5. Sydney 4. Blue Mts. 4 5. Bowral 1. Wandin 3. Melbourne 3 4 10. Gisborne 4 10. Malmsbury 9. Castlemaine 3 10 11. Sea Lake 10. Kerang. Murtoa 9. Rainbow 11. Kalgoorlie 5. Wyndham 3 5. Darwin 3. 75♂ 41♀

This, the smallest species of the genus, is the most widely distributed, ranging from Victoria to Cape York and Darwin. It has the migratory habit, though in lesser degree than in *teutonia* and *pythias.* We have records of a flight in the Blue Mountains lasting from 21st April to 4th May 1906, and of a smaller flight at Gisborne lasting five or six days in October 1894: the direction of the flight was from north to south in the Blue Mountains, but from east to west at Gisborne. Like *sulphurata* this species has a double indentation of the inner edge of the dark termen of forewing, but it is not nearly so deep. The markings beneath are sometimes more prominent than in the figure. The sexmarks of the male consist of a well defined patch of silky grey scales on both sides of the median vein of forewing beneath (like that of *virgo, sulphurata* and *indecisa*), and also a closely set patch of salmon-coloured scales between vein 8 and the subcostal of hindwing above (like that of *sana, lineata* and *herla*).

221. **Terias sana** Butler. **Fig. 785.**

Proceedings Entomological Society London 1877, p. 470.

♂. ABOVE. Forewing yellow: costa very narrowly and apex broadly, brown-black: termen to vein 2 broadly, and thence to tornus narrowly, brown-black: sometimes traces of a faint dot on discocellulars, brown. Hindwing yellow: termen narrowly brown-black.

BENEATH yellow.

Nandin 16.11.15 (ANB) Gisborne 24.2.1917. 5.3.1917. Daylesford V. (R.McW) 8.9.1917 – Toronto 6-'17. Quorn S.A. (Elston) Nov. 1918.

Stanwell Sand. April 1916

♀. Above. Forewing as in male, but slightly paler: sometimes lightly dusted with dark scales. Hindwing pale yellow: apex broadly and termen narrowly, brown-black.

Beneath yellow.

Loc. Cape York 3 4 5. Thursday Is. 4. Prince of Wales Is. 5. Banks Is. 2 3. Darwin 2 3 5. 28♂ 10♀.

The shape of this species is that of *zoraide* in **fig. 539**, but the average size is smaller. There is not the slightest trace of any dot or streak beneath. The sexmark of the male consists of a closely set patch of salmon coloured scales below the median vein of forewing beneath, and a similar but smaller patch between vein 8 and the subcostal of hindwing above.

222. **Terias laeta** Boisduval. (India).

This species is separated by the acute apex of the forewing and the straight dark streaks of hindwing beneath.

222a. **T. laeta lineata** Miskin. **Fig. 543.**

Proceedings Royal Society Queensland 1889, p. 257.

♂. Above. Forewing yellow: costa narrowly and apex broadly, brown-black: termen broadly to vein 2, and thence narrowly to vein 1a, brown-black: a faint dot on discocellulars, brown. Hindwing yellow: apex, and termen narrowly, brown-black, diminishing to a narrow line at vein 1a.

Beneath. Forewing pale yellow: costa and apex suffused pinkish: sometimes a dot on discocellulars, brown. Hindwing yellow often suffused pinkish: a series of faint basal dots, brown: outer area with two straight narrow streaks, brown.

♀. Above as in male, but slightly paler: apex of hindwing broadly brown-black: terminal dark margin often reduced to a dot at each vein.

Beneath as in male, but slightly paler: pinkish suffusion paler.

Loc. Cape York. Thursday Is. 5. Prince of Wales Is. 5 6. Cooktown 9 10 11 12. Cairns 6. Kuranda 5 6 7 11. Ingham 5. Darwin 3 4 5 8 9 11. Melville Is. 51♂ 29♀.

The sexmarks of the male are almost identical with those of *sana*.

223. **Terias herla** Macleay. **Fig. 544.**

King's Survey of Australia, ii, Appendix, p. 460, 1827.

♂. Above. Forewing yellow: apex, and termen to vein 2, brown-black: a dot on termen at vein 1a, brown-black: sometimes traces of a faint dot on discocellulars, brown. Hindwing yellow: termen with a dot at each vein, brown-black, rarely coalescing near apex to form a narrow terminal margin.

Beneath. Forewing yellow: costa and apex sometimes suffused pinkish: rarely a dot on discocellulars, brown. Hindwing yellow, usually dusted with dark scales, but sometimes (as in type) suffused with a delicate rose colour: a series of basal dots, brown: outer area with a series of curved discal streaks, brown.

♀. Above as in male, but slightly paler and sometimes lightly dusted with dark scales.

Beneath as in male but without pinkish suffusions.

Loc. Cape York 5 11. Prince of Wales Is. 5. Claudie R. 11. Cooktown 6 10. Cairns 6. Kuranda 3 4 6. Ingham 5. Mackay 1 4 5 7. Brisbane 4 5 10 12. Richmond R. 10. Sydney. 49♂ 36♀.

Easily recognised by the curved dark streaks of the hindwing beneath. The sexmarks of the male are very similar to those of *sana* and *lineata*.

We have carefully examined the type of *T. immaculata* Miskin, in the Queensland Museum, from Rockhampton, and find that it is an example of *herla* with the dark markings beneath absent.

Family **PAPILIONIDAE.**

No measurements are given as, unless stated expressly to the contrary, the figure is always that of a butterfly of average size. As the male is usually more plentiful than the female, and as the characters used in the published descriptions are usually taken from the male, that sex alone is figured, except in cases where marked differences of shape or pattern occur in the female. Usually the male has brighter colours than the female, and where there are tail-like projections to the hindwing, and these differ in length, those of the female are the longer.

Ovum. Spherical, flattened at base: usually pale green or cream: desposited singly upon either surface of a leaf of the foodplant.

Larva. Cylindrical, with a double dorsal row of fleshy tubercles (**fig. L. 562**): or subcylindrical, smooth, with a raised fleshy protuberance at the fourth segment (**fig. L. 557**): the second segment with a dorsal slit, through which the larva can erect a **Y** shaped retractile tentacle called the osmaterium.

Pupa. More or less smooth: head and thorax set at a different angle to the abdomen: head sometimes bifid and sometimes with a medial horn: tail pointed: usually attached to a vertical surface, head uppermost, by the tail and a central silken girdle (**fig. P. 557, 562**).

Imago. Very variable in size and shape: often with a long tail to vein 4 of hindwing. Forewing (in all Australian species) with all twelve veins present, an additional short vein, 1b, reaching to dorsum, and a short cross vein connecting vein 1a with median near base. Hindwing with vein 1b absent, and precostal vein and cell present: dorsum not channelled to receive abdomen. Males sometimes with secondary sexual characters on either forewing or hindwing above. Eyes smooth: antennae short and with a distinct club.

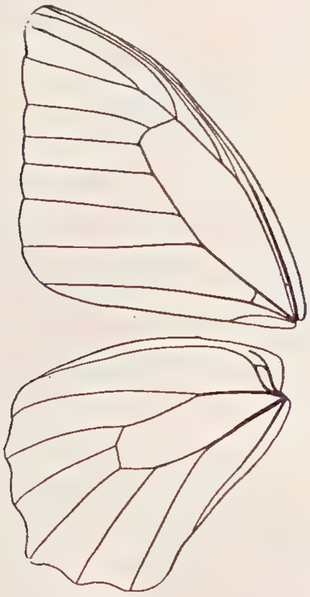

Fig. AG. Wing venation of *Papilio sthenelus.*

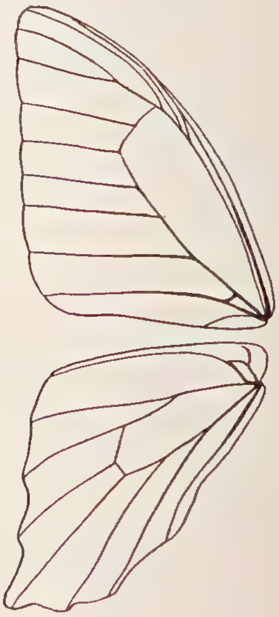

Fig. AH. Wing venation of *Papilio choredon.*

Range. Worldwide: numerous in the tropics: represented by but a few species in the colder regions.

The range of this family affords many very interesting problems of geographical distribution, some of which are possible of solution now that most of the varying forms from the lands and islands of the Indo-Australian Region are known to science. Space forbids a fuller discussion of this fascinating subject, but we give a short outline of our views upon the question as it affects the origin of the Australian species.

As with other families of the butterflies, there is ample evidence of two migrations of *Papilios* from New Guinea by way of Cape York, into eastern Australia within comparatively recent times. The earlier of these has extended southward along the coast to the subtropical scrubs or jungles of northern N. S. Wales (lat. 31°). Occasional stragglers are to be met with along the whole coastline of N. S. Wales, and more especially in the neighbourhood of Sydney, where the foodplants of the larvae are put to ornamental and economic uses.

To this migration belong *P. sarpedon choredon, P. eurypylus lycaon* and *E. cressida cressida,* all of which are found in Sydney, though *cressida* is a somewhat rare visitor. These three species, as well as *P. fuscus capaneus* and *Troides priamus richmondius,* are firmly established on the coastline of northern N. S. Wales. *P. aegeus* was the first of the genus to be recorded from Australia, and was evidently well established in Sydney early in the nineteenth century: its larvae then found suitable indigenous foodplants, but now prefer the introduced citrus trees. Four of the six species comprising this migration, *richmondius, cressida, aegeus* and *fuscus,* undoubtedly originated in or near New Guinea: *fuscus* is more ancient than the others and is the only one of the four to extend westward of Wallace's line. The other two species, *sarpedon* and *eurypylus,* have an extended range in the Indo-Australian Region, and probably originated to the westward of New Guinea.

The later migration has given us species that have only reached the tropical scrubs of the northern Queensland coast. There, in addition to the six species of the earlier invasion, are to be found *P. ulysses joesa, P. aristeus parmatus,* and *P. agamemnon ligatus* reaching Mackay (lat. 22°); and *P. macfarlanei, P. ambrax egipius* and *Menelaides polydorus queenslandicus* reaching only to the scrubs of the Cairns district (lat. 15°). These two migrations are still readily defined, and were no doubt more strongly marked a hundred years ago. Localities such as Sydney and Mackay, and in lesser degree the Clarence River and the Cairns scrub district, form definite points where the weakening of the New Guinea element in our Rhopalocerous fauna is evident.

In dealing with the yet older Australian butterflies of this family the question is not quite so simple. Our most ancient *Papilio* is P. *macleayanus,* and this is found all along the eastern coast and even in Tasmania. It may have reached Australia from New Guinea, but more probably has extended to New Guinea from Australia: it is more abundant at an elevation of 1000ft. and over than near sea-level, and the only allied species is the mountain *P. weiskei* of New Guinea. *P. anactus* and *P. leosthenes* are confined to Australia, but both appear to be slowly extending their range northward so may eventually reach New Guinea: it is only within the last few years that both these species have been taken farther north than Mackay.

P. demoleus sthenelus, which favours the drier interior and is but an occasional visitor to the east coast, has reached us by way of Timor, and has gradually spread over the whole continent, and thence to southern New Guinea. *P. fuscus canopus, P. eurypylus nyctimus* and *M. liris,* together with *Cethosia penthesilea, Atella phalanta* and *Hypolimnas antilope,* have come by the same route and have not spread westwards from the east coast. They are confined to a relatively small area which probably contains other forms agreeing with those of the western rather than the eastern section of the Malay Archipelago. On the other hand, *E. cressida cassandra* has spread to Darwin from the east coast.

Key to the Genera of *PAPILIONIDAE.*

A. Vein 9 of forewing from subcostal well before end of cell .... *Troides.*
B. Vein 9 of forewing from subcostal at end of cell.
  a. Anal valves well developed in the male .... *Papilio.*
  b. Anal valves not developed in the male.
    a^1. Forewing transparent: female with a sphragis after fertilization .... *Eurycus.*
    b^1. Forewing opaque: female without a sphragis (seal) .... *Menelaides.*

Genus **TROIDES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 88, 1816: Rothschild, Novitates Zoologicae, 1895, p. 183.

Antennae about half the length of costa. Forewing long and narrow: vein 11 free: vein 11 and vein 10 from outer half of subcostal: vein 9 from subcostal well before end of cell: vein 8 stalked with vein 7, but stalk short: vein 6 equidistant at base from vein 5 and from vein 7: vein 1a and median joined by crossvein near base: vein 1b present. Hindwing rounded: vein 1b absent: precostal vein and precostal cell present. Male with a long and broad sexmark between vein 1a and vein 4 of forewing above: abdominal fold of hindwing with long hairs: anal valves very prominent.

The larvae of the Australian *Troides* have two rows of fleshy dorsal spines, and two rows of lateral spines: they all feed upon climbing vines of the genus *Aristolochia*. The pupa has a bifid head and is attached by the tail and the usual central silken girdle, and not by separate lateral threads fixed to a tubercle on each side, as is recorded of some Indian species of the genus.

TYPE. *Troides priamus* Linne, from Amboina.

224. **Troides priamus** Linne. (Amboina).

The four Australian subspecies of this handsome butterfly range from the islands of Torres Straits, through the Cape York peninsula, and along the east coast to the scrub patches of the northern rivers of N. S. Wales. The three taken on the continent are each confined to a separate scrub district which is isolated by a wide belt of drier forest country. We have figured one only of the four, but have written a general description common to all: this in conjunction with supplementary subspecific details will be of more value than four lengthy and minutely detailed descriptions.

♂. ABOVE. Forewing rich black: a subcostal band from base to just before apex, bright green: a band from base along dorsum and termen, but not reaching apex, bright green: a broad sexmark below cell, dull black. Hindwing bright green: costa, termen and dorsum, black: a series of discal spots, black. Antennae black: thorax black with a dorsal line, green: abdomen golden yellow.

BENEATH. Forewing black: a very variable cell spot, green: a discal and a subterminal series of large variable spots, coalescing towards costa, green. Hindwing green: costa, termen, dorsum and cell veins, black: a series of discal spots, black. Thorax black with a patch at base of wings, red.

♀. ABOVE. Forewing black: a large variable cell spot, greyish white: a discal and a subterminal series of variable spots, coalescing towards costa, greyish white. Hindwing black: outer area with a series of broad elongate sometimes coalescent spots, greyish white: a series of variable discal spots, black. Antennae black: thorax black with a narrow dorsal line, green: collar usually red: abdomen black or grey.

BENEATH. Forewing black: spots as above, but usually larger, more clearly defined, and paler. Hindwing black: spots as above, but paler and towards termen yellow. Antennae black: thorax red: abdomen yellow with segmental margins black.

224a. **T. priamus poseidon** Doubleday.

Annals Magazine Natural History, XIX, 1847, p. 173.

♂. ABOVE with markings typical. Forewing with green bands broad: a narrow streak along median, and usually continued for a short distance along veins 2, 3, 4 and sometimes 5, bright green. Hindwing with termen very narrowly black: a series of up to four discal spots, black.

BENEATH with markings typical and tinged golden. Forewing with cell spot usually occupying the lower half of cell and reaching to base: discal and subterminal spots large, and intermediate black areas narrow. Hindwing green tinged golden: termen narrowly black, and cell veins very narrowly black on upper edge only: a series of six discal spots, with sometimes a seventh in area 1a, black: tornal area usually golden-yellow: sometimes a subterminal suffusion, golden-yellow and rarely a subcostal spot golden.

♀. ABOVE with markings typical. Forewing with pale spots not so clearly defined as in **fig. 551**, and subterminal spots dusted grey and usually smaller. Hindwing with black termen slightly broader than in **fig. 551**, and elongate spots of outer area terminally dusted bronze.

BENEATH with markings typical. Forewing with pale spots as above but not dusted grey. Hindwing with elongate spots of outer area broadly yellow towards termen.

LOC. Banks Is. 2 3. Darnley Is. (type) 4 5 6. Murray Is. 9. 28♂ 16♀.

In one of our male examples from Darnley Island, the green cell spot of forewing beneath is reduced to a small spot in lower apex of cell. Australian specimens with golden spots on hindwing above are of rare occurrence.

224aa. **T. priamus poseidon,** ♀ **f. brunneus** Rothschild.

Novitates Zoologicae 1895, p. 189.

♀. ABOVE. Forewing brown-black: a faint subterminal spot in area 1a and another in area 2, greyish white. Hindwing brown-black: outer area with a series of small elongate spots, greyish white, each enclosing a discal spot, black.

BENEATH. Forewing brown-black: a discal streak in area 2 and another in area 3, greyish white: a series of faint subterminal spots in areas 1a to 5 greyish white. Hindwing as above.

LOC. Darnley Is. 6. 1♀.

[illegible]

[illegible]

[illegible] We have [illegible]

[illegible]

It cannot be expected that each individual butterfly of two adjacent geographical races, can in every instance be distinguished with certainty. Yet the males of *poseidon* can be separated from those of *pronomus* by the larger green spots of forewing beneath, and by their decidedly golden tinge as contrasted with the bluish tinge of *pronomus.* The females of the two races are less easily separated, but none of our *poseidon* females show the yellowish suffusion of hindwing above usual in female *pronomus.*

224b. **T. priamus pronomus** Gray. **Fig. 550, 551.**

Catalogue Lepidopterous Insects British Museum, p. 2, pl. 1, f. 1, 2, 1852.

♂. Above with markings typical. Forewing with green bands not quite so broad as in *poseidon*: green streak along median rarely absent, often confined to that vein, but sometimes continued along veins 2, 3 and 4. Hindwing with termen narrowly black: a series of up to five discal spots, black: often a series of small subterminal spots and a subcostal streak, golden.

Beneath with markings typical. Forewing with green spots smaller than in *poseidon,* and with cell spot and discal spots tinged bluish. Hindwing green tinged bluish: termen and cell veins narrowly black: a series of six discal spots, with sometimes a seventh in area 1a, black: tornal area faintly golden-yellow: usually a series of subterminal spots and a subcostal streak, golden.

♀. Above with markings typical. Forewing black: a large cell spot, and a discal and subterminal series of variable spots coalescing towards costa, greyish white. Hindwing black: termen often suffused yellow: elongate pale spots of outer area dusted bronze, less often coalescent, and usually more sharply pointed towards base than in **fig. 551.**

Beneath with markings typical: elongate spots of outer area of hindwing sometimes wholly yellow.

Loc. Cape York 2 3 4 5 10 11 12. Claudie R. 1 12. 27♂ 14♀.

Our males are more variable than those of *poseidon,* but this may be due to the greater number from which our series have been selected: one or two examples show a slightly bluish tinge in green areas above. The females are also variable, with pale spots larger or smaller than in figure: one example has the black discal spots of hindwing above barely discernible.

This and the last subspecies may be readily distinguished from the remaining two by the *narrow* black margins of cell of hindwing beneath in the male.

224c. **T. priamus euphorion** Gray.

Catalogue Lepidopterous Insects British Museum, p. 4, pl. 2, f. 3, 1852.

♂. Above with markings typical. Forewing with subdorsal green band undulate: green streak of median vein absent. Hindwing with termen more broadly black than in **fig. 550**: a series of four or five large discal spots, black: a large subcostal spot and often a series of subterminal spots golden.

Beneath with markings typical. Forewing with green spots, especially cell spot, much smaller than in **fig. 550,** and all tinged bluish. Hindwing green tinged bluish: termen and cell veins black: a series of seven large discal spots, black: usually a large subcostal spot and a series of subterminal spots, golden yellow.

♀. Above with markings typical. Forewing black: spots dusted grey, usually much smaller than in **fig. 551,** discal series always incomplete, and subterminal spots always small. Hindwing black: outer area with a series of basally pointed elongate spots, greyish heavily dusted bronze, and each partially or wholly enclosing a large discal spot, black.

Beneath as Above: elongate spots of hindwing yellow, except the basal points, white.

Loc. Cairns 6 7. Kuranda 1 2 3 6 7 8 9 10 11 12. Ingham 4 5 9. Goondi 3. Mackay 5 9. Townsville 5 6. 28♂ 21♀.

The male is always without the green streak of median vein of forewing above. The female is quite as large as *poseidon* and *pronomus,* but is easily distinguished by the decidedly smaller and much darker pale spots: it is subject to considerable variation: we have one example showing no trace whatever of the pale cell spot of the forewing above.

224d. **T. priamus richmondius** Gray.

Catalogue Lepidopterous Insects British Museum, p. 2, pl. 2, f. 1, 2, 1852.

♂. ABOVE with markings typical. Forewing with subdorsal green band undulate, often thinly scaled, and sometimes confined to tornal area. Hindwing with termen more broadly black than in **fig. 550**: a series of four or five large discal spots, black: rarely a series of subterminal spots and a subcostal streak golden.

BENEATH with markings typical. Forewing with green spots, especially cell spot, much smaller than in **fig. 550**, and all tinged bluish. Hindwing green tinged bluish: termen and cell veins, broadly black: a series of seven large discal spots, black: usually a series of subterminal spots, golden yellow.

♀. ABOVE with markings typical. Forewing black: spots dusted grey, smaller than in **fig. 551**, discal series always incomplete, and subterminal spots always small. Hindwing black: outer area with a series of basally pointed elongate spots, greyish white dusted bronze, and each enclosing a large discal spot, black.

BENEATH as ABOVE: elongate spots of hindwing yellow, except basal points, whitish.

LOC. Maryborough. Gympie. Richmond R. 1 2 3 4 10. 15♂ 14♀.

This is the most southern of the four subspecies, and is distinctly smaller especially in the female. The green streak of median vein of forewing above is always absent. The female is more like **fig. 551** than is female *euphorion*, but is much smaller.

Genus **PAPILIO** Linne.

Systema Naturae, X, i, p. 458, 1758: Felder, Verhandlungen Zoologisch-botanischen Gesellschaft Wien 1864, p. 280: Rothschild, Novitates Zoologicae 1895, pp. 167-463.

Antennae less than half the length of costa. Forewing of varying shape: vein 12 reaching costa well beyond end of cell: vein 11 in some species free (**Fig. AG.**) and in others anastomosed with vein 12 (**Fig. AH.**): vein 11 and vein 10 from outer third of subcostal: vein 9 from upper apex of cell: vein 8 stalked with vein 7: vein 1a and median joined by a cross-vein near base: vein 1b present. Hindwing of varying shape: usually elongate: often with a straight or spatulate tail to vein 4: sometimes with a short tooth to vein 4: precostal cell narrow. Males sometimes with secondary sexual characters: anal valves present but less prominent than in *Troides*.

TYPE. *Papilio machaon* Linne, from Europe.

FOODPLANT. *Rutaceae* (Citrus trees).

The Australian species of this genus fall naturally into four sections.

SECTION A. Forewing with vein 11 free. Hindwing sometimes toothed at vein 4: never tailed: subcostal between base of vein 6 and vein 7, straight. Males without secondary sexual characters. Pupa with a bifid head.

225. **Papilio demoleus** Linne. (Asia).

225a. **P. demoleus sthenelus** Macleay. **Fig. 564.**

King's Survey of Australia, ii, Appendix, p. 457, 1827.

♂. ABOVE. Forewing brown-black: base dusted cream: a large spot in cell at threefourths and a small streak in end of cell, cream: a series of discal, of subapical, and of subterminal spots, cream: termen with a series of small spots, cream. Hindwing brown-black: base and dorsum dusted cream: a broad irregular central band, sometimes up to three postcellular dots, and a series of subterminal spots, cream: termen with a series of small spots, cream: a large tornal spot, dull red: a large subapical spot in area 7, black dusted blue.

BENEATH. Forewing dark brown: a series of basal streaks, cream: cream spots as above but larger: a series of large irregular spots from costa at threefourths to vein 4, yellow-brown. Hindwing cream: a series of broad basal lines, black: a narrow spot in end of cell, yellow-brown edged black: a series of irregular discal spots, yellow-brown basally edged metallic blue, and then edged black: an irregular interrupted broad subterminal line, reaching along veins to termen, brown-black: a large tornal spot, dull red: a large subapical spot in area 7, yellow-brown margined metallic blue and then brown-black.

Richmond R. 9.10.11

Toronto 4/17

♀. Above and Beneath as in male: tornal spot of hindwing above, basally edged metallic blue.

Loc. Cape York 3. Prince of Wales Is. 5 6. Cairns 9. Kuranda. Herberton 11. Ingham 5 9. Mackay 9. Rockhampton. Brisbane 2 10. Esk. Toowoomba. Richmond R. 1. 9. Port Macquarie 10. Sydney 11. Blue Mts. 10. Melbourne. Bacchus Marsh 11. Kerang 10 11. Dimboola 11. Adelaide 11 12. Kimberley 5. Wyndham 3 4 5. Daly R. 4. Darwin 3 8 12. Roper R. Tennants Creek. 26♂ 15♀.

This race has been separated from the Indian subspecies by the coalescence of the two cream spots in cell of forewing: this distinction is however not invariable, for we have several undoubted Australian specimens in which the cell spot is divided. It is remarkable that this butterfly should inhabit the drier interior rather than the coastal districts: it is a rarity in southern Australia, where wandering single examples are occasionally seen.

226. **Papilio anactus** Macleay. **Fig. 562.**

King's Survey of Australia, ii, Appendix, p. 458, 1827.

♂. Above. Forewing black: a large spot in cell at twothirds and a spot on discocellulars, white dusted brown: a series of large elongate discal spots, white dusted brown, those in areas 1a and 1b, smaller and paler: a series of subterminal spots, dull white. Hindwing black: a large central area, reaching dorsum and costa, white, with dividing veins and a spot on discocellulars, black: a series of elongate subterminal spots, black basally edged blue and outwardly edged by a series of spots, dull red: sometimes a subapical dot in area 6 and another in area 7, white.

Beneath. Forewing as above: spots not dusted brown. Hindwing as above: subapical white spots always present and larger than above.

♀. Above and Beneath as in male.

Loc. Kuranda 11. Ingham 4 5. Townsville. Mackay 1 2 3 9 11. Rockhampton. Brisbane. Blackbutt 1. Richmond R. 1 3. Manning R. 3. Sydney 1 2 3 4 12. Illawarra. Blue Mts. 1 10. Mildura 11. Kerang 2 3 10 11. 34. 15♂ 9♀.

This species has no near allies beyond Australia. The sexes are very similar, but the male may be at once distinguished by the anal valves.

227. **Papilio ambrax** Boisduval. (New Guinea).

227a. **P. ambrax ambrax** Boisduval.

Voyage Astrolabe, Lepidoptera, p. 40, 1832.

♂. Above. Forewing black. Hindwing black: a large central area, reaching costa and well into area 1a near tornus, white.

Beneath. Forewing black: a series of subapical dustings between veins, white. Hindwing black: a tornal spot, intensely black, towards base broadly edged orange.

♀. Above. Forewing brown-black: a series of discal streaks between veins, dusted white. Hindwing brown-black: a small central area, not reaching costa or dorsum, white: a tornal spot, black, margined by an irregular patch which reaches area 3, red-brown: a series of three subterminal spots in areas 2, 3 and 4, red-brown.

Beneath. Forewing as above: streaks between veins more prominent. Hindwing as above: a complete series of subterminal spots, orange, those in areas 5 and 6, paler and smaller.

Loc. Darnley Is. 5 6. 9♂ 5♀.

227aa. **P. ambrax ambrax, f. ambracius** Wallace.

Transactions Linnean Society London 1865, p. 54.

♂. Above as in *ambrax*, but with an apical patch on forewing white.

Beneath as in *ambrax*: apical dustings of forewing much broader.

♀. Above and Beneath as in *ambrax*, but a white patch below cell of forewing.

Loc. Darnley Is. 5. 2♀.

The one sex only has yet been taken within Australian limits: both examples were captured with *ambrax* of both sexes, in May 1910.

227b. **P. ambrax egipius** Miskin. **Fig. 559, 560.**

Transactions Entomological Society London 1876, p. 451.

♂. Above. Forewing black: apex dusted white. Hindwing black: a large central area, reaching costa but only entering area 1a as a dusting, white: a tornal spot, intensely black, towards base broadly edged red: traces of a series of subterminal spots, red.

Beneath. Forewing black: a series of subapical dustings between veins, white. Hindwing black: rarely a slight dusting of white scales in central area: tornal spot as above: a variable series of subterminal spots, red.

♀. Above. Forewing brown-black: a series of discal streaks between veins, dusted white, and below cell developed to a variable patch, white. Hindwing brown-black: a small central area, not reaching costa or dorsum, white: a tornal spot, black, margined by an irregular patch which reaches area 2, red-brown: a complete series of subterminal spots, red-brown.

Beneath. Forewing as above: white patch below cell larger. Hindwing as above: a complete series of subterminal spots, red-brown.

Loc. Cairns 6 ‸8 9 10. Kuranda 1 3 5 6 9 10. Atherton 5. Herberton 1 2. Ingham 9. Mackay. 14♂ 9♀.

228. **Papilio aegeus** Donovan. (N. S. Wales).

This large and handsome butterfly is found in New Guinea and the surrounding islands as well as in Australia, and is very particularly interesting on account of the dimorphism of the female. Close allies are found in the Moluccas (*gambrisius* and *tydeus*), Timor Laut (*inopinatus*), Solomons (*bridgei* and *ptolychus*) and Santa Cruz Is. (*oberon*).

228a. **P. aegeus aegeus** Donovan. **Fig. 546, 547.**

Insects New Holland, pl. 14, ♀, (*P. erectheus*, pl. 15, ♂), 1805.

♂. Above. Forewing black: a band of subapical spots, white. Hindwing black: a central area, rarely entering cell, white: a tornal spot, red.

Beneath. Forewing as above: apex dusted white. Hindwing black: a tornal spot and a complete series of subterminal spots, red, with an inner series of narrow lunular dustings, blue, and then of narrow lunular dustings, grey.

♀. Above. Forewing brown-black: a large spot in cell at threefourths and a complete outer series of large elongate spots, white dusted brown. Hindwing brown-black: a central area, white: a tornal spot and a complete series of subterminal spots, red: an incomplete series of discal spots, dusted blue.

Beneath. Forewing as above: large spots of outer area paler. Hindwing as above: tornal and subterminal red spots larger: a complete series of discal spots, dusted blue: a bar from central area to vein 8 at about half, white.

Loc. Cape York 1 2 3 4 5. Thursday Is. 1 2 5 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Cooktown 10. Cairns 6 8 9 10. Kuranda 1 6 7. Ingham 4 5 9. Townsville 4 5 6 7. Mackay 4 11. Rockhampton 9. Brisbane 5 10. Stradbroke Is. 12. Blackbutt 1. Mt. Tambourine 12. Richmond R. 1 2 3,5,9,10 Dorrigo 11. Ebor 1. Port Macquarie 10. Manning R. 3. Sydney 1 2 3 4 11 12. Wandin 2. 29♂ 24♀.

228aa. **P. aegeus aegeus, ♀ f. beatrix** Waterhouse. **Fig. 565.**

Victorian Naturalist 1908, p. 118.

♀. Above. Forewing white lightly dusted brown: base, costa, termen, dorsum and veins, heavily dusted brown. Hindwing brown-black: a large central area, reaching base and dorsum, white: tornal and subterminal spots ill-defined and pale orange instead of red: an incomplete series of faint discal spots, dusted blue.

Beneath. Forewing as above but paler: base and dorsum towards base, brown-black. Hindwing as above: tornal and subterminal spots more clearly defined, reddish yellow: a bar from central area to vein 8 at about half, white.

Loc. Cape York 3. Prince of Wales Is. 6. Ingham. 6♀.

Stanwell Park Oct 1916 Toronto 4/17 Port Macquarie 3.4/1917 Urunga (W) Oct 1920. Gisborne V. cultivated in garden
11.2.1925 (Coll. Miss D. Irvine)

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This form of *aegeus* corresponds with the ♀ form *onesimus* of *aegeus ormenus*, and like *onesimus* is very variable. In colour it ranges from cream to white both above and beneath, and varies considerably in the extent of the pale areas and the width of the ill-defined dark margins. The figure is taken from the example in the Miskin collection of the Queensland Museum: the type in the Waterhouse collection (captured since the plate was engraved) is almost identical.

Many of the northern specimens of *aegeus aegeus* naturally show strong affinities with the next subspecies. One of our males from Cape York is identical with some males of *ormenus* from New Guinea, and several females from Cape York have the white bar of hindwing beneath very narrow. So far we have seen no males corresponding with *ormenus* form *pandion*, nor females approaching the socalled "typical" form of *ormenus*. Many of the females from Banks Is. cannot be separated from females of *ormenus* from New Guinea, the white bar having entirely disappeared.

A remarkable aberration of female *aegeus aegeus* was figured by Olliff in Proceedings Linnean Society N. S. Wales 1886, p. 1252: this has the subterminal red spots of hindwing reaching nearly to the central white area.

228b. **P. aegeus ormenus** Guerin.

Voyage Coquille, pl. 14, f. 3, 1829: Rothschild, Novitates Zoologicae 1895, p. 306-7.

♂. ABOVE. Forewing black: a band of subapical spots, white. Hindwing black: a large central area, usually entering cell, white: rarely a tornal spot, orange-red.

BENEATH. Forewing as above: apex dusted white. Hindwing black: a tornal spot and an incomplete series of subterminal spots, orange-red, with faint indications only of an inner series of narrow lunular spots dusted blue and grey.

♀. ABOVE. Forewing brown-black: a large spot in cell at threefourths and a complete outer series of large elongate spots, white dusted brown. Hindwing brown-black: a central area, white: a tornal spot and a complete series of subterminal spots, orange-red sometimes paler: traces of an incomplete series of discal spots, dusted blue.

BENEATH. Forewing as above: large spots of outer area paler. Hindwing as above: subterminal spots larger and paler: traces of a complete series of discal spots, dusted blue.

LOC. Darnley Is. 1 2 3 4 5 6. Murray Is. 8 9. 40♂ 28♀.

We have described the usual female form met with over the whole range of *ormenus*, and corresponding with the normal female form of *aegeus*: in Seitz' Macrolepidoptera this form is called *leporina* Jordan.

228ba. **P. aegeus ormenus, ♂ f. pandion** Wallace.

Transactions Linnean Society London 1865, p. 56.

♂. ABOVE. Forewing black: a narrow band of small subapical spots, white. Hindwing black: a large central area, usually entering cell, white: rarely a tornal spot, orange-red.

BENEATH. Forewing as above: apex dusted white. Hindwing as in typical *aegeus ormenus*.

LOC. Darnley Is. 5. Murray Is. 8. 3♂.

228bb. **P. aegeus ormenus, ♀ f. timoxena** Jordan.

Seitz' Macrolepidoptera, Vol. IX, p. 67.

♀. ABOVE. Forewing brown-black: a faint bar just beyond end of cell, whitish. Hindwing as in typical *ormenus*, but with central white area much smaller.

BENEATH. Forewing as above: whitish postcellular bar larger. Hindwing as above: central white area smaller.

LOC. Darnley Is. 5. Murray Is. 8. 3♀.

228bc. **P. aegeus ormenus, ♀ f. amanga** Boisduval.

Voyage Astrolabe, Lepidoptera, p. 39, 1832.

♀. ABOVE. Forewing grey-brown: veins brown. Hindwing white: termen broadly brown: tornal area yellow.

BENEATH. Forewing grey-brown, towards base brown: a broad band across discocellulars and nearly reaching tornus, white. Hindwing as above.

LOC. Darnley Is. 6 7. Murray Is. 8. 5♀.

228bd. **P. aegeus ormenus,** ♀ **f. onesimus** Hewitson.

Exotic Butterflies, Vol. II, Papilio 3, fig. 8, 1858.

♀. Above. Forewing white lightly dusted brown: base, costa, termen, dorsum and veins, heavily dusted brown. Hindwing brown-black: a large central area, reaching base and dorsum, white: tornal and subterminal spots ill-defined and orange-yellow: traces of an incomplete series of faint discal spots, dusted blue.

Beneath. Forewing as above but paler: base and dorsum towards base, brown-black. Hindwing as above: tornal and subterminal spots more clearly defined.

Loc. Darnley Is. 4 5 6. Murray Is. 8 9. 12♀.

This is the white form of *ormenus*, corresponding with the white form *beatrix* of *aegeus*, but at once separated by the absence of the white bar of hindwing beneath. Like that form it is very variable: no two examples of either *amanga* or *onesimus* are exactly identical: the forewing above varies from an almost uniform grey-brown to a dull white. Many intergrades between *amanga* and *onesimus* occur: the abdomen above is yellowish in both forms.

SECTION B. Forewing with vein 11 free: hindwing with a spatulate tail (except in *leosthenes*) to vein 4: subcostal between base of vein 6 and vein 7 (except in *leosthenes*) straight. Males without secondary sexual characters (except in *ulysses*). Pupa with a bifid head (less marked in *leosthenes*).

229. **Papilio ulysses** Linne. (S. Moluccas).

This species ranges from the Moluccas to the Solomon Islands, with a very small subspecies (*montrouzieri*) occurring in New Caledonia and the Loyalty Is.

229a. **P. ulysses joesa** Butler. **Fig. 468, 470.**

Entomologist 1869, p. 348; Lepidoptera Exotica, i, p. 21, pl. 8, f. 1, 2, 1870.

♂. Above. Forewing intensely black: a broad basal area, reaching dorsum and well beyond end of cell, but not quite reaching costa, brilliant metallic blue: a spot on discocellulars, black. Hindwing intensely black: a broad basal area, reaching costa and dorsum and well beyond end of cell, brilliant metallic blue. Forewing with a series of long lenticular silky black sexmarks, broadly on veins 1a to 5, and narrowly on vein 6.

Beneath. Forewing dark brown: outer area paler, and except along termen dusted white: a small area at end of cell, dusted white. Hindwing dark brown: subterminal area paler: a transverse central section from costa to dorsum, dusted silvery white: a tornal spot, orange-brown: a series of six elongate subterminal rings, broadly black, narrowly edged blue and towards base edged whitish.

♀. Above. Forewing as in male: outer margins of blue area less sharply defined, but reaching further along dorsum: sexmarks absent. Hindwing as in male: usually a subterminal series of irregular spots, dusted blue.

Beneath as in male.

Loc. Cape York 4. Claudie R. 1. Cairns 6 7. Kuranda 1 2 3 4 5 6 7 9 10 11 12. Atherton 3 4. Ingham 4 5 9. Mackay 1 5 6 9 12. 37♂ 26♀.

Foodplant. *Evodia accedens.*

230. **Papilio fuscus** Goeze. (Moluccas).

This species has an exceedingly wide range. It occurs in the Malay peninsula as *prexaspes*, in the Solomon Islands as *xenophilus*, and in the New Hebrides as *hypsicles*, while *schmeltzi* from Fiji and *godeffroyi* from Samoa are also derivatives. Three subspecies occur in Australia: *indicatus* and *capaneus* from the east coast differ but slightly: *canopus* is much more divergent but we have many reasons for considering it a subspecies of *fuscus*. Its foodplant is the same: the larvae and pupae are almost identical: the records of Jordan in Seitz' Macrolepidoptera fail to show a single instance of a *fuscus* subspecies and a *canopus* subspecies occurring in the same locality (the Cape York record of *canopus* is an error): the great gap between *canopus* of northern Australia and *hypsicles* of New Hebrides can only be explained by their representing corresponding points along radii of distribution from a common centre; parallel instances are the subspecies of *P. agamemnon* from the Key Islands and the Bismarck Archipelago, and the close similarity of *P. oberon* from Santa Cruz with *P. aegeus* from N. S. Wales.

Richmond R. 10. (GAW 1922)

230a. **P. fuscus capaneus** Westwood. **Fig. 527.**

Arcana Entomologica, ii, p. 15, pl. 52, f. 1, 2, 1843.

♂. ABOVE. Forewing dark brown: a narrow discal band, ill-defined as it diminishes towards dorsum, cream. Hindwing dark brown: a discal band, swelling broadly from vein 7 to vein 4, then diminishing rapidly and sometimes not reaching dorsum, white: a tornal spot and an incomplete series of subterminal spots, orange broadly edged black and beyond towards base faintly edged blue.

BENEATH. Forewing as above but paler and terminal area faintly dusted white. Hindwing as above but paler: discal white band reduced to large spots: a tornal spot and a complete series of subterminal spots, orange broadly edged black and beyond towards base faintly edged blue.

♀. ABOVE and BENEATH as in male: subterminal orange spots more clearly defined.

LOC. Cape York 3 11. Claudie R. 1. Cooktown 12. Kuranda 1. Ingham 4. Mackay 4. Rockhampton. Brisbane. 20♂ 11♀.

230b. **P. fuscus indicatus** Butler.

Annals Magazine Natural History 1876, p. 248.

♂. ABOVE. Forewing brown-black: an obscure narrow discal band, often reduced to subapical spots, whitish. Hindwing brown-black: a discal band, swelling broadly from vein 7 to vein 4, then diminishing rapidly and usually not reaching dorsum, white: rarely a small tornal spot, orange.

BENEATH. Forewing as above, but paler and terminal areas dusted white. Hindwing as above, but paler: discal white band reduced to small spots: sometimes a tornal spot, and a complete series of small subterminal spots, pale orange broadly edged black, and beyond towards base edged blue.

♀. ABOVE and BENEATH as in male: subterminal orange spots more clearly defined.

LOC. Thursday Is. 1 12. Banks Is. 2 3. Murray Is. 9. Darnley Is. 2 3 12. 12♂ 2♀.

This subspecies is separated from *capaneus* by its darker colour, narrower and more obscure discal pale bands, the usual absence of the tornal orange spot, and by the much paler and smaller orange subterminal spots.

Thursday Is. and Cape York examples are treated in Seitz' Macrolepidoptera as *indicatus,* and Fruhstorfer also describes Cape York examples as *yorkeanus.* The transition from *capaneus* to *indicatus* is so gradual that it is very difficult to define the geographical limits: we consider it best to treat all continental examples as *capaneus,* and all insular examples as *indicatus*: Cape York specimens are really intergrades.

230c. **P. fuscus canopus** Westwood. **Fig. 526.**

Annals Magazine Natural History 1842, p. 38: Arcana Entomologica, ii, p. 81, pl. 68, 1844.

♂. ABOVE. Forewing black: a band of discal spots, cream. Hindwing black: a band of large discal spots, white: sometimes a faint tornal spot and indications of an incomplete series of faint subterminal spots, pale orange broadly edged black and beyond towards base faintly edged blue.

BENEATH. Forewing as above but paler. Hindwing as above but paler: a tornal spot, orange: a complete series of subterminal spots, cream broadly edged black and beyond towards base edged blue.

♀. ABOVE and BENEATH as in male: forewing with discal spots in areas 2, 3 and 4 usually smaller: hindwing usually with a tornal spot and a complete series of subterminal spots, yellow: lateral white lines of abdomen much broader.

LOC. Daly R. 4. Darwin 1 2 3 4 8 9 10 12. Melville Is. (type). 17♂ 11♀.

The record of this subspecies from Cape York, in Seitz' Macrolepidoptera, is an error.

231. **Papilio leosthenes** Doubleday. **Fig. 553.**

Annals Magazine Natural History 1846, p. 372.

♂. ABOVE. Forewing dull white: a series of four bands, first and second from costa to dorsum, third from costa to vein 2, fourth from costa to median, brown-black: termen broadly brown-black narrowing to dorsum: a narrow subterminal band, dull white, with traces of an inner band, dusted white. Hindwing dull white: a narrow band from costa at base to tornus, and another from costa at one-third to vein 2 beyond cell, brown-black: termen brown-black and dorsum narrowly brown-black: tornal area dusted grey: a tornal spot and a series of small discal spots from vein 4 to dorsum, yellow-brown edged black: a series of subterminal spots, dull white, those in tornal area outwardly edged dull blue.

BENEATH. Forewing as above. Hindwing as above: discal spots extending to area 8, yellow-brown edged black.

♀. Above and Beneath as in male.

Loc. Cape York 1 11. Mackay 1 2 11. Brisbane 1 2 3 11. Blackbutt 1 11. Esk 2. Richmond R. 2.1 9.10. Dorrigo 10 11. Sydney 1. 13♂ 9♀. Bushley Q. ANB 19.3.24

So far no representative of this species has been found beyond Australia. By the very short antennae and straight tail, it is allied to *parmatus*, but by the pupa and the free vein 11 of forewing, it is allied to the species of Section A and Section B. The two specimens from Cape York (one of them bred from the pupa) have both been taken quite recently: the single example we captured in Sydney was probably a wanderer from farther north.

SECTION C. Forewing with vein 11 anastomosed with vein 12. Hindwing with a tail (one species spatulate and one species straight) to vein 4: subcostal between base of vein 6 and vein 7, long and bent inwards. Males with secondary sexual characters upon the hindwing, consisting of a cottony patch of scales and a fringe of long whitish hairs hidden within the abdominal fold. Pupa with a horn extending outward from the head.

232. **Papilio aristeus** Cramer. (Amboina).

This species ranges from India and Ceylon to the Bismarck Archipelago (*paron*).

232a. **P. aristeus parmatus** Gray. **Fig. 536.**

Catalogue Lepidopterous Insects British Museum, p. 30, pl. 3, f. 2, 1852.

♂. Above. Forewing white: a series of five bands, first and second from costa to dorsum, third from costa to below median, fourth and fifth from costa to median, black: termen broadly brown-black, narrowing to tornus, with a very narrow subterminal band, white. Hindwing white: a narrow band from costa near base to tornal spot, and sometimes another from costa at onethird to area 2 just before terminal margin, black: termen black with tornal area dusted grey: a series of narrow subterminal spots, white: a tornal spot, black.

Beneath. Forewing as above, but bands and termen, brown. Hindwing as above, but bands and termen, brown: a curved series of small interrupted discal spots, scarlet irregularly edged black: subterminal spots broad and outwardly edged black.

♀. Above and Beneath as in male.

Loc. Cape York 11. Claudie R. 1. Cooktown 1 12. Kuranda 2 3 9 11. Mackay 1 3. 18♂ 2♀.

The antennae, like those of *leosthenes*, are remarkably short. We have an interesting aberration in which the dark bands of forewing are much reduced in length and the basal band only is present on hindwing: this gives the specimen a very white appearance, as compared with normal examples.

233. **Papilio macleayanus** Leach. **Fig. 555.**

Zoological Miscellany, i, p. 17, pl. 5, 1814.

♂. Above. Forewing black: a basal area, reaching dorsum and almost reaching costa, pale green: a spot in end of cell, a large subcostal spot at threefourths, and a small spot in base of area 4, green: a series of small subterminal spots, pale green. Hindwing black: a basal area reaching costa and dorsum, pale green: traces of a series of small faint subterminal spots, pale green.

Beneath. Forewing as above: apex and termen brown: subterminal spots larger and obscurely edged silvery white. Hindwing rich brown: basal area green outwardly edged silvery white: termen dusted silvery with subterminal spots obscure.

♀. Above and Beneath as in male: usually larger and slightly paler.

Loc. Kuranda 4 5 6 7 9 10. Mackay 3 5 6. Brisbane 1. Mt. Tambourine 12. Richmond R. 1 2 4 9 10. Dorrigo 10 11 12. Ebor 11 12. Port Macquarie 10. Manning R. 3. Ourimbah 4. Sydney 1 3 10 11 12. Illawarra 1 3 4 8 9 12. Blue Mts. 1 9 10 11. Bowral 1. Mt. Kosciusko 1 2. Mt. Hotham 2. Mt. St. Bernard 1 2. Wandin 11 12. Macedon 12. Hobart 2. Mt. Magnet 3 12. 24♂ 19♀.

This species has a wider range in Australia than any other of the family, and is the only one taken as far south as Tasmania. It is not found beyond Australia, and its only near ally is the handsome purplish *P. weiskei* from the highlands of New Guinea. Northern examples are slightly paler in colour and usually rather larger than those taken in the south, but otherwise we can find no points of division into geographical races. The larvae feed upon *Geijera salicifolia* (Sassafras) and *Camphora officinalis* (Camphor laurel), and bred specimens, as with others of this family, are a much paler green.

Woondin Jan 1917 (A.R. Burns) Toronto 4/17. Port Macquarie 3.4.1919 - Kosciusko 1-8 Dec 1921 (GAW) a new alpine subsp.

Port Macquarie 1/1918 Toronto 4/15 Stanwell Park Apl 16.

Richmond R. 9.10.12. (GAW 1922)

SECTION D. Forewing with vein 11 anastomosed with vein 12. Hindwing with subcostal between base of vein 6 and vein 7, long and bent inwards: vein 4 produced to a blunt tooth. Males with secondary sexual characters upon the hindwing, consisting of a cottony patch of scales and a fringe of long whitish hairs hidden within the abdominal fold. Pupa with a horn, of a different shape in each known species, extending outward from the head.

234. **Papilio sarpedon** Linne. (Asia).

In its many subspecies, this *Papilio* occurs in Ceylon, India, southern Japan, throughout the Malay Archipelago to the Solomons, and as far to the eastward as New Caledonia (*gelon*).

234a. **P. sarpedon choredon** Felder. **Fig. 557.**

Verhandlungen Zoologisch-botanischen Gesellschaft Wien 1864, pp. 305, 350.

♂. ABOVE. Forewing black: a central band of large spots, coalescent from dorsum to vein 6, blue. Hindwing black: a central band, blue, paler towards costa: a series of narrow lunular subterminal spots, blue.

BENEATH. Forewing brown: spots as above. Hindwing brown: band and spots as above: a curved series of five narrow discal spots, and a narrow subbasal bar from costa, scarlet edged black.

♀. ABOVE and BENEATH as in male.

LOC. Cape York 2 4 11. Prince of Wales Is. 5 6. Banks Is. 2 3. Cooktown 1. Cairns 1 2 3 4 6. Kuranda 1 2 12. Ingham 4 5 9. Mackay 4 11. Brisbane 1 4 5 7 10. Mt. Tambourine 12. Richmond R. 2 3 9 10 Dorrigo 11. Port Macquarie 10. Manning R. 3. Sydney 1 2 3 4 9 10 11. Illawarra 12. 27♂ 21♀.

The larvae feed upon Camphor laurel, and specimens bred in captivity lose nearly all their blue colour. We have two aberrant examples, each with a large blue spot in cell of forewing.

235. **Papilio eurypylus** Linne. (Moluccas).

This species has almost the same range as *sarpedon*, but has not yet been taken in the Solomon Islands. The larvae feed upon the Custard apple.

235a. **P. eurypylus lycaon** Westwood. **Fig. 552.**

Arcana Entomologica, ii, p. 15, 1843.

♂. ABOVE. Forewing brown-black: a broad central band of large spots, coalescent from dorsum to vein 4, pale blue: a series of narrow cell spots, obscure towards base, and a series of small subterminal spots, pale blue. Hindwing brown-black: a broad central band, and a series of small subterminal spots, pale blue.

BENEATH. Forewing brown: spots as above but paler: cell spots and subterminal spots, broadly margined silky white. Hindwing brown: band and spots as above but paler, with subterminal spots broadly margined silky white: a curved series of narrow discal spots, lowest produced along vein 1a, scarlet edged black: a subcostal spot near base, scarlet edged black.

♀. ABOVE and BENEATH as in male: usually larger.

LOC. Cape York 1 11. Murray Is. 9. Cooktown 12. Kuranda 3 8. Herberton 1. Townsville 11. Bus Cly Q. ANB Mch 2d Mackay 2 4 11. Esk 2. Brisbane 1 12. Richmond R. 1 2 3. Sydney 1 2 3. 12♂ 10♀.

235b. **P. eurypylus nyctimus** nov. **Fig. 568.**

♂. ABOVE. Forewing brown-black: a central band of large spots, coalescent from dorsum to vein 3, pale blue: a series of narrow cell spots, obscured towards base, and a series of small subterminal spots, pale blue. Hindwing brown-black: a central band and a series of small subterminal spots, pale blue.

BENEATH. Forewing brown: spots as above but paler: cell spots and subterminal spots narrowly margined silky white. Hindwing brown: band and spots as above but paler, with subterminal spots narrowly margined silky white: a curved series of narrow discal spots, lowest produced along vein 1a, scarlet edged black: a subcostal spot near base, scarlet edged black.

♀. Above and Beneath as in male.

Loc. Darwin 1 2 4 5 8 12. 7♂ 8♀.

Differs from the eastern race in the much narrower central pale band, which occupies onethird instead of fully onehalf of the dorsum of forewing. When the figure was engraved we had the one example only: others since received show that the average size is fully equal to, if not slightly larger than, that of *lycaon.*

236. **Papilio macfarlanei** Butler. **Fig. 554.**

Proceedings Zoological Society London 1877, p. 471.

♂. Above. Forewing black: a narrow band at base and another from subcostal near base to dorsum at basal edge of central band, pale green: a narrow central band of large spots, coalescent from dorsum to vein 2, pale green: a double series of small cell spots, and a series of small subterminal spots, pale green. Hindwing black: a narrow band from base along edge of abdominal fold, pale green: a narrow central band, a series of small discal spots, and a series of small subterminal spots, pale green. Head, thorax and abdomen, green with a broad dorsal stripe, black.

Beneath. Forewing brown: apex and termen dusted silky white: bands and spots as above but paler: pale spots of areas 5, 6 and 8, joined by distinct streaks, black. Hindwing brown: termen dusted silky white: bands and spots as above but paler: a narrow bar from costa near base to subcostal, and a lunular spot in base of area 6, scarlet edged black.

♀. Above and Beneath as in male.

Loc. Cape York 1 2 5 7. Thursday Is. 4. Prince of Wales Is. 5 6. Banks Is. 3. Cairns 6. Kuranda 3 4 5 6. Innisfail 9. 13♂ 14♀.

We can discover no points of difference between Australian examples and those from New Guinea and the Aru Islands.

In Seitz' Macrolepidoptera this species is not recorded as Australian.

237. **Papilio agamemnon** Linne. (China).

This species ranges through Ceylon, India, southern China and the Malay Archipelago to the Solomon Islands.

237a. **P. agamemnon ligatus** Rothschild. **Fig. 556.**

Novitates Zoologicae 1895, p. 451.

♂. Above. Forewing black: a narrow basal band, and another from subcostal near base to dorsum before half, green: a series of large central spots, a double series of small cell spots, and a series of small subterminal spots, green. Hindwing black: a narrow band from base along edge of abdominal fold, and another from costa at onesixth towards but not reaching tornus, green: a series of discal and a series of subterminal spots, green. Head, thorax and abdomen, green with a broad dorsal stripe, black.

Beneath. Forewing brown dusted silky white: bands and spots as above but paler: pale spots in areas 2, 5, 6 and 8, joined by indistinct streaks, brown. Hindwing brown dusted silky white: bands and spots as above but paler, and subterminal spots basally edged broadly brown: a lunular spot in base of area 6, and another near base of area 7, scarlet outwardly edged broadly black.

♀. Above and Beneath as in male: tooth of vein 4 of hindwing usually longer.

Loc. Cape York 1 2. Thursday Is. 1. Prince of Wales Is. 5 6. Banks Is. 2 3. Cooktown. Cairns 6. Kuranda 1 3 4 5 9 11. Ingham 4 5. Mackay 3 4 5. 16♂ 14♀.

This subspecies may be distinguished from typical *agamemnon* by the large central green spot of area 1a of forewing being elongate and undivided. Beneath it is often suffused pink, excepting the green spots. Under the name *mynion,* Fruhstorfer has separated Australian specimens from the New Guinea race, but we do not agree with this view.

Genus **MENELAIDES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 84, 1816.

Antennae less than half the length of costa. Forewing narrow with apex rounded: vein 12 reaching costa beyond end of cell: vein 11 free: vein 11 and vein 10 from outer third of subcostal: vein 9 from upper apex of cell: vein 8 stalked with vein 7: vein 6 arising nearer to vein 7 than to vein 5: vein 1a and median joined by a crossvein near base: vein 1b present. Hindwing with vein 4 produced to a tail in one species, and a tooth in the other: precostal vein present, and precostal cell narrow: vein 1b absent. Males without secondary sexual characters. Abdomen without anal valves in the male, and without a sphragis after fertilization in the female. Pupa with truncate head, extended wingcases, and with four pairs of flattened projections on dorsal surface of abdomen.

TYPE. *Menelaides polydorus* Linne, from the Moluccas.

FOODPLANT. *Aristolochia.*

238. **Menelaides polydorus** Linne. (S. Moluccas).

238a. **M. polydorus queenslandicus** Rothschild. **Fig. 563.**

Novitates Zoologicae 1895, p. 240.

♂. ABOVE. Forewing black: an outer series of narrow streaks between veins, dusted white, and developed below cell to a variable and ill-defined patch, white. Hindwing black: a central area covering outer third of cell and extending from vein 1a to vein 6, white and divided into spots by the black veins: a series of subterminal spots, faintly dusted red. Apex of abdomen, red.

BENEATH. Forewing as above. Hindwing as above: a series of large subterminal spots, and a spot on dorsum at half, bright red.

♀. ABOVE and BENEATH as in male: termen of forewing more convex.

LOC. Cape York 1 2 3 4 5 6 7 11. Thursday Is. 4. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 1 12. Murray Is. 8 9. Claudie R. 11. Coen 11. Cooktown 11. Kuranda 1 9. Ingham 5 9. 45♂ 21♀.

This subspecies varies in the extent of the dusted white markings of forewing above. Some examples show an extra white spot in base of area 6, and another near base of area 7, of hindwing beneath, and rarely these spots are present above.

239. **Menelaides liris** Godart. **Fig. 574.**

Encyclopedie Methodique, IX, p. 72, 1819.

♂. ABOVE. Forewing brown: outer half of cell and an outer series of broad streaks between veins, heavily dusted white. Hindwing black: an ill-defined central band, cream: a series of subterminal spots, faintly dusted red. Apex of abdomen, red.

BENEATH. Forewing as above. Hindwing as above: a series of large subterminal spots, bright red: a spot on dorsum at half, dusted red.

LOC. N. W. Australia.

This species occurs in Timor, and with slight variations in Timor Laut, Wetter Is., and Letti Is. Our figure and description are taken from a coloured drawing of a reputed Australian specimen in the British Museum, the locality of which is questioned by Rothschild in his Monograph of the family. No other Australian examples are known, but from independent field observations that have reached us, we believe that a form of this species does occur in northwest Australia, probably in the tropical scrub of the Ord River.

Genus **EURYCUS** Boisduval.

Species General des Lepidopteres, p. 391, 1836.

Antennae onethird the length of costa. Forewing narrow with apex rounded: vein 12 reaching costa well beyond end of cell: vein 11 free: vein 11 and vein 10 from outer third of subcostal: vein 9 from upper apex of cell: vein 8 stalked with vein 7: vein 1a and median joined by a crossvein near base: vein 1b present. Hindwing rounded: precostal vein present: precostal cell broad: vein 4 and vein 5 arising very close together: vein 1b absent. (**Fig. AI.**). Males without secondary sexual characters. Abdomen without anal valves in the male, but with a sphragis (seal) in the female after fertilization. Pupa with truncate head, extended wingcases, and with four pairs of small pointed projections on dorsal surface of abdomen.

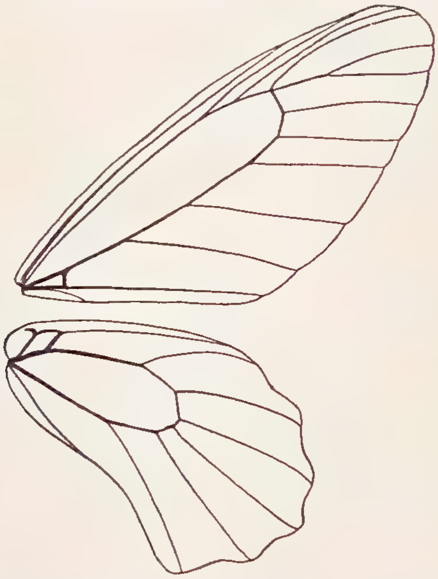

Fig. AI. Wing venation of *Eurycus cressida.*

Type. *Eurycus cressida* Fabricius.

Foodplant. *Aristolochia.*

This genus is confined to Australia and Papua, and its only known ally is *Euryades* from the eastern La Plata of South America. Schatz & Rober suggest that these two genera are ancestral, and that from them have been derived *Papilio* and *Parnassius*. These authors figure *Eurycus* with vein 9 of the forewing from the subcostal before end of cell: this is an error: the point of emission is slightly variable: in some examples it is from the stalk of vein 7 and vein 8 just beyond cell, but in only one of scores of specimens can we find it rising from subcostal, and then it is emitted close to end of cell.

240. **Eurycus cressida** Fabricius.

240a. **E. cressida cressida** Fabricius. **Fig. 558, 561.**

Systema Entomologiae, p. 448, 1775.

♂. Above. Forewing transparent: base black: costa, apex and termen narrowly dusted black: a large ovoid spot at middle and another at end of cell, black. Hindwing black: a central band, covering outer third of cell and reaching from costa to dorsum, white with dividing veins and a spot at end of cell, black: a series of variable subterminal spots, dusted red. Apex of abdomen red.

Beneath. Forewing as above. Hindwing as above: a series of subterminal spots, red, and a series of small terminal spots, whitish.

♀. Above. Forewing transparent: costa and termen narrowly and apex broadly, smoky brown: a faint spot in cell at half, smoky brown, and a spot at end of cell, black. Hindwing transparent: termen broadly smoky brown: traces of a series of irregular central spots, smoky black: a series of ill-defined subterminal spots, whitish.

Beneath. Forewing as above. Hindwing as above: pale subterminal spots larger and sometimes dusted pinkish: a series of small terminal spots, whitish.

Loc. Cape York 3 11. Prince of Wales Is. 5 6. Banks Is. 2 3. Coen 11. Cooktown 10 11. Cairns 6 7. Kuranda 3 5 6 7. Ingham 4 5 9. Townsville 6 7. Mackay 3. Brisbane 1 4 5 9 10. Blackbutt 1. Richmond Rs.10 Port Macquarie 10. Sydney. 27 ♂ 26 ♀.

The female is almost devoid of scales: there are a few near the margins, some on the spot at end of cell of forewing beneath, and some in cell of hindwing beneath.

240b. **E. cressida cassandra** nov.

♂. Above. Forewing transparent: base black: costa, apex and termen, narrowly dusted black: an ovoid spot in middle and another at end of cell, black. Hindwing black: a central band, covering outer third of cell and reaching from costa to dorsum, white with dividing veins and a spot at end of cell, black: a series of variable subterminal spots, dusted red. Apex of abdomen red.

Beneath. Forewing as above. Hindwing as above: a series of subterminal spots, red: a series of small terminal spots, whitish.

♀. Above. Forewing transparent: costa and termen narrowly and apex broadly, smoky brown: a faint spot in cell at half, smoky brown, and a spot at end of cell, black. Hindwing brown: basal area without scales: central band as in male but veins and spot at end of cell, brown: a series of subterminal spots, faintly dusted pinkish.

Beneath. Forewing as above. Hindwing as above but basal brown area scaled.

Loc. Daly R. 4. Darwin 3 4 8 9 10 11 12. 23♂ 14♀.

This is the northwestern race: the male differs from *cressida* very slightly but the black spots of the forewing are smaller and of more nearly equal size: in the female the hindwing beneath is almost completely scaled.

Family **HESPERIDAE.**

No measurements are given, as the figure is in every instance that of a butterfly of average size.

Ovum. Large, opaque, in many Australian species dome-shaped: sometimes smooth: sometimes vertically ribbed.

Larva. Elongate, cylindrical or subcylindrical, naked: head large and hard: thorax tapering towards the head so as to form a long neck. (**Fig. L610, L723**).

Pupa. Elongate, cylindrical or subcylindrical, naked: enclosed within a shelter formed by drawing the leaves of the foodplant together with silken threads. When feeding upon grasses, the larva pupates vertically, and usually with the head upwards, but sometimes (*Mesodina*) with the head downwards. The head of the pupa is provided with a shield or cap, for which we propose the term *operculum*: when the butterfly emerges, this becomes detached from the pupal skin, and in all the species we have examined the operculum is specifically constant and distinct. In years to come, when the pupae of a greater number of species are known, these opercula will form valuable aids to the separation and discrimination of genera, and perhaps even of subfamilies. (**Fig. P633, P723, P731**).

Imago. With six perfect legs in both sexes, often spined. Of small or moderate size, sombre colours and rapid flight: body very robust: head large: eyes smooth and prominent: antennae wide apart at base, and always ending (in Australian species) with a thickened curved hook: palpi short, very broad, closely pressed against the face, and densely hairy. Forewing triangular: with twelve veins, all of which are emitted from the base or from the cell: cell more or less feebly closed. Hindwing with vein 5 usually absent: cell more or less feebly closed: vein 1b always present: termen often produced at vein 1a, but never (in Australian species) tailed or toothed. Males often with a distinct discal bar of specialised scales, and more rarely with a costal fold, on forewing above.

Range. Worldwide. Australian *Hesperidae*, both as regards species and individuals, are more plentiful in the temperate than in the subtropical portions of the continent. This is caused by a diminution (especially along the coast) as one goes north of the species of the subfamily *Trapezitinae*, which is of Australian origin. This diminution is not counterbalanced by those species of the subfamily *Erynninae* which have spread into Australia by way of Cape York Peninsula, and are consequently more plentiful in the far north. At sealevel near Sydney 27 species of *Hesperidae* are to be found, and no less than 18 of these belong to the *Trapezitinae*: at sealevel near Cairns the number found is but 21 and includes only two species of *Trapezitinae*. In the more temperate climate of the higher levels of Kuranda, Atherton and Herberton, no less than 50 species are taken, of which 20 belong to the *Trapezitinae* and 22 to the *Erynninae*.

This is perhaps the most difficult family of the Butterflies, and so far it has received the least attention. Many attempts at classification have stopped short at the *Hesperidae*, or at most have treated that family less exhaustively. In more than one instance the magnitude of the task proved too great for the lifetime of the author, whose labours ended before his researches among the *Hesperidae* were completed. The paucity of the material available, and the want of sufficient reliable data have been difficulties in the way of the study. Collectors the world over have naturally exploited the larger and showier families before troubling much about the *Hesperidae*, the butterflies of which, upon the wing or at rest, are as a rule singularly inconspicuous. It is only within the last twenty years that anything approaching representative collections of the *Hesperidae* have been gathered.

The structural characters of the family are unusual. The emission of all the veins of the forewing from either the cell or the base prevents the use of the venational characters for subdivisional purposes to anything like the same extent, that obtains in the other families. We have had to fall back upon structural points in antennae, palpi and sexmarks. These minor points were but little known and seldom used by early writers, and consequently many of the earlier descriptions and figures can now well be applied to quite a number of similar though distinct species. In cases where no type was indicated, or where the type has since disappeared, some of these early descriptions are still in doubt. In some instances it can never be more than a matter of opinion which of two or more species the figure was drawn from; and the only course open is to apply the name to the more abundant of the similar species now occurring in the locality named: where the exact locality was not indicated, or is of doubtful accuracy, the confusion is intensified.

Of the Australian Butterflies, the *Hesperidae* is certainly the most difficult family. Not only are the points of structural difference minute, and many of the species of closely similar appearance, but in the past irresponsible entomologists seem to have amused themselves publishing incomplete, inaccurate, and entirely worthless descriptions of supposed Australian species. Even some modern authors seem to think that with this family any liberties may be taken: as late as 1904, we find Mabille describing an Australian? Hesperid from a single example, which he tells us had lost both its palpi and its antennae. Mabille's account of the *Hesperidae* in the "Genera Insectorum" not only omits many Australian species described by the author himself, but almost the whole of the species described by Ploetz and Miskin; while the synonymy of the Australian species is often hopelessly inaccurate.

Dating from the critical paper on the *Hesperidae* by Watson in 1892, with supplement in 1895, and the work of Elwes & Edwards in 1897, great advances have been made in the determination and classification of the Oriental *Hesperidae*. Much of this work is applicable to Australia, and we have also taken advantage of a good many manuscript notes of the late L. de Niceville, to whom we submitted examples of a number of Australian species. Our collection of Indo-Malayan Hesperids has also proved very useful for structural comparisons with allied Australian species.

Our written descriptions, had more space been available, might perhaps have supplied more detail. But, taken in conjunction with our figures and localities, we feel confident they will enable students, for the first time, to easily and accurately determine every known Australian Hesperid. Superficially similar species can be readily separated upon examination of the antennae, palpi or sexmark. We have figured a number of antennae drawn for us by Mr. R. J. Tillyard, M.A.

This first attempt at the division of the Australian *Hesperidae* into subfamilies has been attended with no little difficulty. Eight species belong to the *Hesperinae*, and six others to the *Ismeninae* (Watson's Section C of the *Pamphilinae*, with the very distinctive palpi). There remain no less than 77 species, all of which, according to Watson, would belong either to Section A or to Section B of his *Pamphilinae*. The subfamily *Pamphilinae* we propose to restrict to those defined under his Section A, first omitting all the included Australian genera: he admits these are somewhat aberrant, and they form a natural group almost confined to Australia; the few species from New Guinea and the adjacent islands are undoubtedly of Australian origin.

For these Australian genera of Watson's *Pamphilinae* Section A (with vein 5 of forewing almost straight) we propose the name *TRAPEZITINAE*: and for Watson's *Pamphilinae* Section B, the Australian genera of which are almost if not entirely of Indo-Malayan origin, we propose the name *ERYNNINAE*. This leaves us with no species of true *Pamphilinae* in Australia.

With the above modifications, and with the inclusion of *Euschemon* within the *Rhopalocera*, we have followed somewhat closely the structural characters used by Watson. But we have in every instance first verified them by careful examination, and for this purpose have bleached the wings of a great number of both Australian and Indo-Malayan Hesperids.

The grouping of genera in subfamilies is to a large extent a matter of convenience; it makes the study of any particular section less difficult. And though our five subfamilies are separated upon small structural points, each of them is not only distinctive in general appearance, but also in habits of flight.

Key to the Subfamilies of *HESPERIDAE*.

A. Forewings held erect when resting: often with a discal sexmark above in male.
  a. Hindwing with vein 5 absent.
    a^1. Forewing with vein 5 straight at base .... *TRAPEZITINAE.*
    b^1. Forewing with vein 5 curved towards vein 4 at base .... *ERYNNINAE.*
  b. Hindwing with vein 5 present .... *ISMENINAE.*
B. Forewings held flat when resting: without a discal sexmark above in male.
  a. Costa of forewing less than half again as long as termen: hindwing without sexmark beneath in male .... *HESPERINAE.*
  b. Costa of forewing half again as long as termen: hindwing with sexmark beneath in male .... *EUSCHEMONINAE.*

Subfamily **TRAPEZITINAE.**

OVUM. Dome shaped: large: usually vertically ribbed.

LARVA. Cylindrical or subcylindrical: head usually brown and body pale green. Feeds at night, and hides by day in the roots of the foodplant, or in a shelter formed by drawing together a few of the leaves.

PUPA. Cylindrical: with a distinctive operculum in each species: shelters in the same way as the larva.

IMAGO. Of robust build, and with but few exceptions, of small size. When in a state of complete repose the butterflies rest with their wings erect, and the upper surfaces pressed closely together. Forewing with vein 5 straight, not arising markedly nearer to vein 6 than to vein 4: never arising nearer to vein 4 than to vein 6. Hindwing with vein 5 absent, rarely indicated by a fold of the wing membrane. Males with or without a discal sexmark on forewing above.

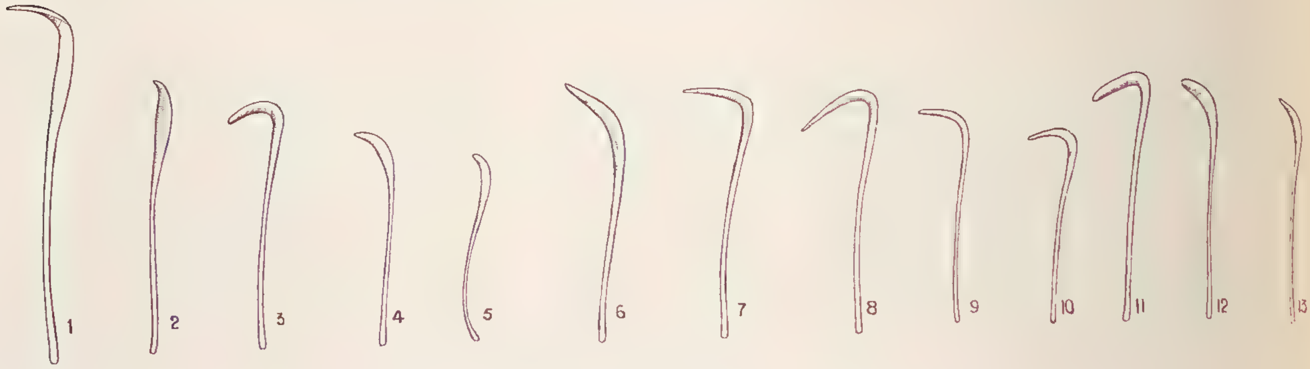

Fig. AJ. Antennae of *Trapezitinae* (enlarged).

1. *Trapezites symmomus.* 2. *Trapezites luteus.* 3. *Mesodina halyzia.* 4. *Anisynta sphenosema.* 5. *Anisynta cynone.* 6. *Oreisplanus perornata.* 7. *Hesperilla ornata.* 8. *Hesperilla picta.* 9. *Neohesperilla crocea.* 10. *Neohesperilla senta.* 11. *Motasingha dirphia.* 12. *Motasingha monticola.* 13. *Dispar compacta.*

This subfamily is confined to Australia, with the exception of two or three species from New Guinea, and one species recorded from both the Aru Is. and the Key Is.; but we feel sure that many new species await discovery in the highlands of New Guinea.

Key to the Subfamily *TRAPEZITINAE.*

A. Forewing in male without sexmark.
a. Hind tibiae with middle as well as terminal pair of spurs (**Fig. AKa**).
a^1. Antennae with apiculi sharply pointed (**Fig. AJ 1**) .... *Trapezites.*
b^1. Antennae with apiculi very blunt (**Fig. AJ 5**): termen of forewing slightly shorter than dorsum .... *Anisynta.*
c^1. Antennae with apiculi blunt (**Fig. AJ 6**): termen of forewing much shorter than dorsum .... *Oreisplanus.*
b. Hind tibiae with terminal pair of spurs only (**Fig. AKb**) .... *Mesodina.*
B. Forewing in male with a linear sexmark.
a. Clubs of antennae abruptly bent before middle.
a^1. Antennae with apiculi pointed (**Fig. AJ 7, 8, 9, 10**).
a^2. Hindwing with an orange or yellow central band above .... *Hesperilla.*
b^2. Hindwing uniformly brown or grey-brown above .... *Toxidia.*
c^2. Hindwing with one or a pair of small hyaline discal spots .... *Neohesperilla.*
b^1. Antennae with apiculi blunt (**Fig. AJ 11**) .... *Motasingha.*
b. Clubs of antennae evenly bent at middle (**Fig. AJ 13**) .... *Dispar.*
C. Forewing in male with an ovoid sexmark .... *Signeta.*

Of the ten genera of this subfamily, *Hesperilla, Toxidia* and *Neohesperilla* are the least satisfactory. The others can all be distinguished by structural characters of the imagines, but these three can only with certainty be separated from each other by the facies of the various species. If grouped under the single genus *Hesperilla,* the number of species (22) makes it very unwieldy: and, though so closely similar in structure, each of the three genera forms a natural group readily separated by its general appearance. From what little we know of the pupal characters, we anticipate that these will eventually provide the structural distinctions, as well as further divisions within the still large genus *Hesperilla.*

Genus **TRAPEZITES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 112, 1816.

Antennae more than twothirds the length of costa: clubs stout, abruptly bent beyond the middle, and (except in *T. luteus*) with tips sharply pointed (**Fig. AJ 1, 2**). Palpi with third joint short, blunt, porrect. Hind tibiae with two pairs of spurs. Forewing with costa nearly straight and termen slightly shorter than dorsum: vein 5 almost straight and about equidistant between vein 4 and vein 6: vein 2 varying from much nearer base than vein 4 (*T. symmomus*) to equidistant between base and vein 4 (*T. phigalia*): male without a discal sexmark. Hindwing with vein 5 very faintly indicated by a fold of the wing membrane. (**Fig. AL**).

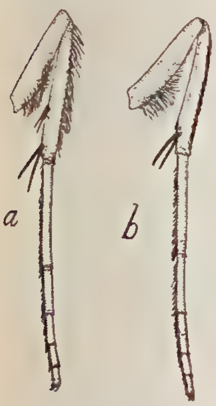

Fig. AK. Hind legs of (a) *Toxidia peroni.* (b) *Mesodina halyzia.* (enlarged).

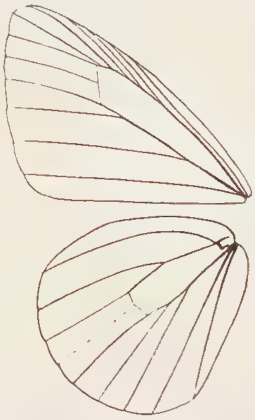

Fig. AL. Wing venation of *Trapezites symmomus.* (enlarged).

Type. *Trapezites symmomus* Hubner.

This genus is confined to Australia, but may yet be discovered in New Guinea: it contains eleven more or less closely allied species. We are unable to use Watson's genus *Patlasingha* (type *P. phigalia*) because, though the types of the two genera can be readily separated, the other nine species grade from *Trapezites* to *Patlasingha,* and we find it impossible to draw a definite parting line. The pupae of *T. symmomus* and of *T. eliena* have the operculum smooth and without a prominence.

241. **Trapezites symmomus** Hubner. **Fig. 731, 732.**

Zutrage Sammlung Exotischer Schmetterlinge, f. 225, 226, 1823.

♂. Above. Forewing brown-black: a large quadrate spot in end of cell, and three transverse subapical spots, pale yellow, hyaline: a large elongate discal spot in area 2, a small one in area 3, and a minute irregular one in area 1a, pale yellow, hyaline: an ovoid spot in area 1a at half, and a streak on dorsum from base, orange: cilia brown, at tornus orange. Hindwing brown-black: a broad central band, orange: cilia orange, at veins brown.

Beneath. Forewing brown: apex broadly and costa narrowly, orange-brown: spots as above: discal spot of area 1a narrowly extended to vein 1a, and yellow. Hindwing orange-brown: a large spot in cell, bluish white ringed black: a series of six almost confluent discal spots, bluish white edged above with black and below with brown: a spot near base of area 1a, bluish white outwardly edged black.

♀. Above as in male: termen of forewing more convex.

Beneath as in male.

Loc. Kuranda 1 9 11. Herberton 1 12. Mackay (*Lower*). Brisbane 10. Richmond R. 1 3 4. Sydney 1 2 3 4 11 12. Illawarra 2 3 4. Blue Mts. 1. Moruya 12. Frankston 3. Wandin 2. Healesville 12. 21♂ 25♀. Port Macquarie 3.4/1918 Sorrento 3.4.20.

The largest species of the subfamily. Some examples have the spots of the hindwing beneath, brown instead of bluish white.

242. **Trapezites iacchus** Fabricius. **Fig. 596, 597.**

Systema Entomologiae, p. 533, 1775.

♂. Above. Forewing grey-brown: a quadrate spot in end of cell, and three transverse subapical spots, pale yellow, hyaline: a pair of large discal spots in areas 2 and 3, pale yellow, hyaline: an ovoid discal spot in area 1a, and a faint streak along dorsum, pale yellow: cilia greyish white. Hindwing grey-brown: an obscure central area, clearest in area 4-5, pale yellow: cilia greyish white.

Beneath. Forewing dark brown: apex and costa fawn brown: spots as above. Hindwing fawn brown: a spot in cell, and a series of discal spots in areas 1a, 2, 3 and 6, white ringed black.

♀. Above as in male: termen more convex: spots larger.

Beneath as in male.

Loc. Cape York 4 5 10. Prince of Wales Is. 5 6 7. Claudie R. 1. Kuranda 1 3 4 5 9. Townsville 5 9. Mackay 2 3 4 5. Brisbane 10. 23♂ 19♀.

243. **Trapezites eliena** Hewitson. **Fig. 604, 605.**

Descriptions 100 new Hesperidae, p. 32, 1868.

♂. Above. Forewing brown: a quadrate spot in end of cell, and three transverse subapical spots, yellow, hyaline: an elongate discal spot in area 2, and a smaller one in base of area 3, yellow, hyaline: a spot in area 1a at half, and a streak along dorsum, pale orange: cilia greyish white, at tornus pale orange. Hindwing brown: a central band of almost confluent spots, pale orange: cilia pale orange.

Beneath. Forewing brown: apex and costa broadly orange-brown: spots as above, that in area 1a paler and larger. Hindwing orange-brown: a large spot in cell, and a series of small discal spots in areas 1a, 2, 3 and 6, silvery white ringed black.

♀. Above as in male: slightly paler: spots slightly larger: termen more convex.

Beneath as in male.

Loc. Kuranda 2 4 9 10. Gayndah. Brisbane 1 2 3 10 11. Stradbroke Is. 10. Richmond R. 1 2 9 10. Sydney 1 2 3 4 8 9 10 11 12. Illawarra 2. Blue Mts. 11. Sale 1 3. Wandin 1 12. Gisborne 12. Macedon 12. Lorne 2. Deloraine (*Lower*). Mt. Gambier (*Lower*). 39♂ 36♀.

This species has been confused with *T. iacchus,* but is quite distinct, and easily separated by the central band of orange spots of hindwing above. The orange-brown colour beneath is sometimes, especially in the female, tinged pinkish: the discal spots of the hindwing beneath are often reduced to blackish dots.

A variety of this species, with a single large ringed cell spot only, upon hindwing beneath, and with the darker veins dividing orange band of hindwing above, almost or quite wanting, has been described by Lower (Trans. Roy. Soc. S. A. 1911, p. 139) under the name of *monocycla.* This can only be regarded as an aberration and not as a geographical race, for typical *T. eliena* also occurs in the same localities (Mt. Gambier (Lower) and Gisborne).

244. **Trapezites heteromacula** Meyrick & Lower. **Fig. 622, 623.**

Transactions Royal Society South Australia 1902, p. 84.

♂. Above. Forewing brown: a spot in end of cell and three transverse subapical spots, pale orange, hyaline: an elongate discal spot in area 2, and a smaller one in base of area 3, pale orange, hyaline: a spot in area 1a at half, and a streak along dorsum, orange: cilia brown, at tornus pale orange. Hindwing brown: a broad central band, orange: cilia pale orange.

Beneath. Forewing brown: apex and costa broadly bright yellow-brown: spots as above, that in area 1a much paler. Hindwing bright yellow-brown: a large spot in cell, white broadly ringed black: a pair of discal spots in areas 2 and 3, white faintly ringed black.

♀. Above as in male: termen more convex.

Beneath as in male.

Loc. Cape York 4 5 6 9. Thursday Is. 6. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Claudie R. 1. Cooktown (type). Kuranda 2 3 5 9 10. 10♂ 15♀.

Port Macquarie 3.L.j.9.6 Mac V.1.12.

[illegible]

[illegible]

[illegible]

[illegible] but is quite distinct and easily [illegible]

[illegible]

[illegible] mm. or more [illegible] the pale orange [illegible]

Richmond R. 10.12 GAW. 1922

Toronto 4/17.

245. **Trapezites petalia** Hewitson. **Fig. 657, 658, 659.**

Descriptions 100 new Hesperidae, p. 32, 1868.

♂. Above. Forewing grey-brown: a spot in end of cell, and three small transverse subapical spots, pale yellow, hyaline: a large quadrate spot in area 2, and a smaller one in base of area 3, pale yellow, hyaline: a sometimes obscure spot in area 1a at half, pale yellow: a streak along dorsum, pale yellow: cilia greyish brown, at tornus greyish white. Hindwing grey-brown: a large obscure central spot in area 4-5 and sometimes extending to bases of areas 2 and 3, yellow: cilia greyish white.

Beneath. Forewing grey-brown: apex and costa dull yellow-brown: hyaline spots as above. Hindwing dull yellow-brown: a central area pale yellow, with a spot in end of cell, white broadly ringed black.

♀. Above as in male: termen more convex.

Beneath as in male.

Loc. Herberton 11. Mackay 2 3 11 12. Gayndah (*Meyrick*). Brisbane 3 4 9 10. Sydney 1 2 3 4 5 9 10 11 12. Illawarra 3. 48♂ 8♀.

246. **Trapezites luteus** Tepper.

246a. **T. luteus luteus** Tepper. **Fig. 660, 748.**

Transactions Royal Society South Australia 1881, p. 33, pl. 2, fig. 6.

♂. Above. Forewing grey-brown: a spot in end of cell, and three small transverse subapical spots, pale yellow, hyaline: a small quadrate discal spot in area 2, and a smaller one in base of area 3, pale yellow, hyaline: an obscure spot in area 1a at half, and a streak along dorsum, pale yellow: cilia grey. Hindwing grey-brown: an obscure central spot in area 4-5, and sometimes extending obscurely to the bases of areas 3 and 2, pale yellow: cilia grey.

Beneath. Forewing grey-brown: costa and apex broadly yellow: hyaline spots as above. Hindwing yellow: a small spot in end of cell, white narrowly ringed black.

♀. Above as in male: termen more convex.

Beneath as in male.

Loc. Blue Mts. Castlemaine 2. Ardrossan (type) 11. Adelaide (*Lower*). Port Lincoln (*Lower*). 4♂ 1♀.

246b. **T. luteus glaucus** nov. **Fig. 661, 739.**

♂. Above. Forewing dark brown: a narrow spot in end of cell, and three transverse elongate subapical spots, pale yellow, hyaline: a discal spot in area 2 and a slightly smaller one in base of area 3, pale yellow, hyaline: rarely a faint spot in area 1a at half, pale yellow, and usually a streak along dorsum, pale yellow: cilia greyish white. Hindwing dark brown: a postcellular patch yellowish grey with veins dark brown: cilia greyish white.

Beneath. Forewing brown-black: apex and termen olive yellow: hyaline spots as above. Hindwing olive yellow: a small spot in cell, silvery white narrowly ringed black.

♀. Above and Beneath as in male: termen more convex: spots, especially those of hindwing, much larger.

Loc. Beauty Point 1. Launceston 2. Cressy 1. Karoola 12. Hobart 12. 4♂ 2♀.

247. **Trapezites maheta** Hewitson. **Fig. 606, 607, 614.**

Annals Magazine Natural History 1877, p. 80.

♂. Above. Forewing dark brown: a spot in end of cell, and three transverse subapical dots, pale yellow, hyaline: a large discal spot in area 2, and a smaller one in base of area 3, pale yellow, hyaline: a spot in area 1a at half, and a streak along dorsum, yellow: cilia grey. Hindwing brown-black: a broad central band, orange: cilia grey.

Beneath. Forewing brown: apex broadly pale red-brown: spots as above, that in area 1a larger and paler. Hindwing pale red-brown with a tornal patch, brown: a spot in end of cell, and a spot of equal size beside it in area 1a, silvery white margined black: an interrupted series of discal dots, brown, with a large spot in area 1a, and a minute one on either side and almost confluent with it, silvery white narrowly margined black: cilia yellow-grey, at veins brown.

♀. ABOVE. Forewing as in male: termen more convex: dots and spots slightly larger. Hindwing as in male.

BENEATH. Forewing as in male: apex suffused lilacine. Hindwing pale red-brown suffused lilacine, and with a tornal patch brown: three obscure irregular rings, in cell, in base of area 7 and in area 1a at half, brown: an irregular series of discal rings, brown.

LOC. Kuranda 3 4 10 11. Herberton 10 12. Mackay 10. Brisbane 9. Richmond R. 1 10. Dorrigo 11. Port Macquarie 10. Sydney 1 2 3 4 9 10 11. Illawarra 3. Blue Mts. 3 4. Moruya 2. Jervis Bay. Port Albert (*Kershaw*). 36♂ 24♀.

248. **Trapezites iacchoides** Waterhouse. **Fig. 598, 599, 738.**

Victorian Naturalist 1903, p. 56: *id.* 1912 p. 226.

♂. ABOVE. Forewing dark brown: a large spot in end of cell, pale orange, hyaline: three small transverse subapical spots, yellow, hyaline: a large elongate discal spot in area 2, and a smaller one in base of area 3, pale orange, hyaline: a spot in area 1a at half, orange, and a narrow streak along dorsum, pale orange: cilia brown, at tornus pale orange. Hindwing brown-black: a broad central band, orange: often a spot in cell, orange: cilia greyish white, at veins brown.

BENEATH. Forewing brown: apex broadly and costa narrowly, salmon-grey: basal half of cell narrowly and faintly pale orange: spots as above, that in area 1a paler. Hindwing salmon-grey: a broad streak in area 1b, dark brown: a small spot in end of cell, a larger one in base of area 7, and a still larger one in area 1a at half, silvery white margined black: a series of irregular discal spots in areas 1a, 2, 3, 6 and 7, silvery white margined black, with that in area 1a much the largest.

♀. ABOVE. Forewing dark brown: a large subquadrate spot in end of cell, orange, hyaline, with a small spot above it, orange: three small transverse subapical spots, pale orange, hyaline: a large elongate discal spot in area 2 and a much smaller one in base of area 3, orange, hyaline: a quadrate spot before half in area 1a, bright orange: cilia brown, at veins brown-black. Hindwing brown-black: a broad central band, bright orange: a faint streak in cell, orange: cilia greyish white, at veins brown.

BENEATH. Forewing brown: apex broadly and costa narrowly salmon grey: basal half of cell narrowly pale orange: spots as above with that in area 1a paler. Hindwing salmon grey: a spot in cell, another in area 1a, and a series of six discal spots (that in area 1a much the largest), silvery white margined black.

LOC. Sydney 9 10. Blue Mts. 1 11 12. Pambula 12. 13♂ 1♀.

Easily distinguished by the many silvery spots upon hindwing beneath in both sexes.

249. **Trapezites sciron** nov. **Fig. 746, 747.**

♂. ABOVE. Forewing grey-brown: a small ovoid spot in end of cell, and three transverse subapical dots, pale yellow, semihyaline: a small discal spot in area 2, and a slightly larger one in base of area 3, pale yellow, semihyaline: cilia greyish white. Hindwing grey-brown: central area faintly orange-brown: cilia greyish white.

BENEATH. Forewing grey-brown: apex broadly ashy: spots as above but larger: subapical dots as above but smaller. Hindwing ashy: a spot in cell, a spot in area 1b, a spot in area 7, and a curved series of six discal spots, whitish ringed dark brown.

♀. ABOVE. Forewing as in male, but spots and dots larger: an additional spot in middle of area 1a, pale yellow. Hindwing as in male.

BENEATH as in male.

LOC. Stirling Ranges 10. Yallingup 11. Capel R. Perth. 3♂ 1♀.

This is the first species of the genus recorded from West Australia. It is shaped as in *T. luteus*, which it somewhat resembles above though the spots are much smaller. The markings of the hindwing beneath suggest *T. iacchoides* but are whitish instead of silvery. The antennae are brown above and grey-brown beneath.

250. **Trapezites phigalioides** Waterhouse. **Fig. 615, 624, 625.**

Victorian Naturalist 1903, p. 56: *id.* 1912, p. 225.

♂. ABOVE. Forewing dark brown: a spot in end of cell, yellow, hyaline: three subapical dots, with the lowest one placed distinctly nearer apex out of the transverse line, yellow, hyaline: a large elongate discal spot in area 2, and a smaller one in base of area 3, yellow, hyaline: a spot in area 1a at half, and a narrow streak along dorsum, yellow: cilia grey. Hindwing brown-black: a broad central band, orange: cilia grey, at veins brown.

Toronto 4/17 Bot Macquarie 4/1918

Richmond R 9.10. (GAW 1922)

Toronto 4/17

Beneath. Forewing brown: apex broadly lilacine grey: basal threefourths of cell, broadly orange: spots as above, that in area 1a larger and paler: cilia grey with spots at veins, brown. Hindwing lilacine grey: a broad streak in area 1b, brown: a series of three small rings, in cell, in base of area 7, and in area 1a at half, brown: a series of small irregular discal rings, brown.

♀. Above. Forewing as in male: termen more convex. Hindwing as in male.

Beneath as in male.

Loc. Blue Mts. 11 12. Wandin 11 12. Healesville 12. Gisborne 1 11 12. 18♂ 5♀.

The position of the lowest dot of the subapical series of forewing, and the absence of the silvery spots of hindwing beneath in male, at once separates this species from the very similar *T. maheta*.

251. **Trapezites phigalia** Hewitson. **Fig. 612, 613.**

Descriptions 100 new Hesperidae, p. 32, 1868.

♂. Above. Forewing brown: a spot in end of cell, yellow, hyaline: before and beyond this spot an obscure patch, brown-black: three minute transverse subapical dots, pale yellow, hyaline: a quadrate discal spot in area 2, a smaller one in base of area 3, and often a minute one in upper edge of area 1a, yellow, hyaline: a spot in area 1a at half, yellow: cilia greyish white, at veins brown. Hindwing dark brown: a broad central band, orange: cilia grey, at veins broadly brown.

Beneath. Forewing brown: apex and costa bluish grey: basal twothirds of cell, broadly orange: hyaline spots as above, but larger and confluent: dark patch before and beyond cell spot, larger: spot in area 1a at half, smaller and obscure. Hindwing bluish grey: three small rings, in cell, in base of area 7 and in area 1a at half, brown: a series of small irregular discal rings, brown.

♀. Above. Forewing as in male: termen more convex: spots slightly larger. Hindwing as in male.

Beneath as in male.

Loc. Brisbane 9. Sydney 8 9 10. Blue Mts. 10 11. Sale 1. Wandin 10 11 12. Gisborne 10 11 12. Castlemaine 10 11. Mt. Lofty 11. 52♂ 19♀. Sorrento (WDE), 29.2.1920. [illegible] 12.1.

Genus **MESODINA** Meyrick.

Entomologist's Monthly Magazine 1901, p. 168.

Antennae about twothirds the length of costa: clubs abruptly bent before the middle, and with tips very blunt (**Fig. AJ 3**). Palpi with third joint short, blunt and porrect. Hind tibiae with a terminal pair of spurs only (**Fig. AKb**). Forewing with costa nearly straight and termen slightly shorter than dorsum: vein 5 almost straight and slightly nearer to vein 6 than to vein 4: vein 2 slightly nearer to vein 4 than to base of wing: male without a discal sexmark.

Type. *Mesodina halyzia* Hewitson.

Foodplant. *Patersonia.* We have bred both *M. halyzia* and *M. aeluropis* from the larvae: both species pupate with the head downwards, and have the operculum smooth.

252. **Mesodina halyzia** Hewitson.

252a. **M. halyzia halyzia** Hewitson. **Fig. 688, 689.**

Descriptions 100 new Hesperidae, p. 38, 1868.

♂. Above. Forewing black: a large spot in end of cell, a discal spot in area 2 and a narrower discal spot in base of area 3, white, hyaline: very rarely one or two minute subapical dots, white, hyaline: cilia grey. Hindwing black: cilia grey.

Beneath. Forewing black: costa narrowly and apex, lilacine grey: spots as above. Hindwing lilacine grey: an obscure ring in cell, and a series of obscure discal rings, brown.

♀. Above. Forewing black: cell spot and discal spots as in male: three small transverse subapical spots, white, hyaline: cilia grey. Hindwing black: cilia grey.

Beneath. Forewing as in male: spots as above. Hindwing as in male.

Loc. Port Denison (type). Moreton Is. 9. Sydney 1 2 3 4 5 8 9 10 11 12. Illawarra 1 2 3. Blue Mts. 1 4 11. Wandin 1 11 12. 35♂ 18♀.

252b. **M. halyzia cyanophracta** Lower. **Fig. 774, 775.**

Transactions Royal Society South Australia 1911, p. 119.

♂. Above. Forewing grey-black: a spot in end of cell, and three transverse subapical dots, white, hyaline: a discal spot in area 2, and a narrow discal spot in base of area 3, white, hyaline: cilia grey. Hindwing grey-black: cilia grey.

Beneath. Forewing grey-black: costa narrowly and apex, bluish grey: spots as above. Hindwing bluish grey: an obscure ring in cell, and a series of obscure discal rings, brown.

♀. Above. Forewing as in male: termen more convex: subapical dots larger and confluent. Hindwing as in male.

Beneath as in male: bluish suffusion of hindwing more pronounced.

Loc. Wilson's Inlet 11. Perth 11. Waroona 1 3 11 12. Kellerberrin. 9♂ 4♀.

This is the western race of *M. halyzia* and differs in the colour beneath, and in the presence of the three subapical dots on forewing of male.

253. **Mesodina aeluropis** Meyrick. **Fig. 698, 699.**

Entomologist's Monthly Magazine 1901, p. 168.

♂. Above. Forewing brown-black with base suffused olive yellow: a large spot in end of cell, and three transverse subapical dots, upper ones sometimes obscure, pale yellow: a large discal spot in area 2, another in base of area 3, and sometimes a dot in upper edge of area 1a, pale yellow: cilia grey, at veins brown-black. Hindwing brown-black: central area suffused olive yellow: cilia grey, at veins brown-black.

Beneath. Forewing brown-black: apex grey: cell broadly yellow: discal spots as above: subapical dots obscure. Hindwing grey: three irregular rings, in cell, in base of area 7, and in area 1a at half, brown: a discal series of rings, brown.

♀. Above. Forewing as in male: termen more convex: subapical dots much larger and not obscured. Hindwing as in male.

Beneath. Forewing as in male: subapical dots larger and clearer. Hindwing as in male.

Loc. Blue Mts. 1 10 11 12. 14♂ 14♀.

254. **Mesodina croites** Hewitson. **Fig. 755, 756, 757.**

Exotic Butterflies, Vol. V. Plate Cyclopides I, fig. 14, 1874.

♂. Above. Forewing brown: a large spot in end of cell and extending to vein 12 and to vein 1a at onethird, pale yellow: three small confluent transverse subapical spots, and a pair of small subterminal spots in areas 4 and 5, pale yellow: a large discal spot in area 2 and extending into area 3, pale yellow: a spot in area 1a at twothirds diminishing to vein 2, pale yellow: cilia pale yellow, at veins brown. Hindwing brown: a broad central band, diminishing to vein 1a, orange: cilia pale yellow, at veins brown.

Beneath. Forewing brown: costa, apex and termen, pale yellow-brown: cell broadly orange: spots as above, but discal spot pale orange. Hindwing pale yellow-brown: central band as above but pale yellow: a spot in cell, a spot in area 1a and a spot in area 7, brown: a series of seven discal spots, brown.

♀. Above. Forewing brown: a large spot in end of cell and extending obscurely to vein 1a, pale orange: three confluent elongate transverse subapical spots, and a pair of small confluent subterminal spots in areas 4 and 5, pale yellow: three large irregular discal spots in areas 1a, 2 and 3, pale yellow: cilia pale yellow, with a dot at each vein, brown. Hindwing brown: a broad central band, diminishing to vein 1a, orange: cilia pale yellow, with a dot at each vein, brown.

Beneath. Forewing brown: costa, apex and termen, yellow-brown: cell broadly orange: subapical spots as above: discal spots as above but more regular and orange: subterminal spots as above but lower one orange and upper one yellow. Hindwing pale yellow-brown: costa and dorsum pale yellow: central band as above but pale yellow edged brown: a spot in cell pale yellow edged brown: a spot in base, another in middle and another beyond middle of area 7, pale yellow edged brown.

Loc. Carnarvon. 1♂ 1♀.

The antennae of this species end in definite and very blunt clubs strongly suggestive of *M. halyzia.* The description is written from a male (type ♂) taken at Carnarvon, and from a coloured drawing of the type female in the British Museum. In addition to the type male, we have a pair taken at Pindar in July 1910 which differ from the above description in the following points.

In the male the spot of area 1a of forewing is very small and confined to the lower half of the area: the central band of hindwing is shorter: the cilia of both wings are pale yellow throughout: beneath, the spots of hindwing are only faintly indicated.

In the female all the spots of forewing are pale yellow: the central band of hindwing is shorter, not extending beyond vein 2 or vein 6: the cilia of both wings are very faintly chequered with a few brown hairs at each vein: beneath, both wings are paler: the central band of hindwing is absent and the spots of hindwing are very faintly indicated.

This suggests that the more arid interior produces a geographical race of the species.

Genus **ANISYNTA** Lower.

Transactions Royal Society South Australia 1911, p. 141.

Antennae more than half the length of costa: clubs evenly bent at middle, and with tips blunt (**Fig. AJ 4, 5**). Palpi with third joint distinct, stout and porrect. Hind tibiae with two pairs of spurs. Forewing with costa nearly straight, and termen slightly shorter than dorsum: vein 5 nearer to vein 6 than to vein 4: vein 2 nearer to vein 4 than to base of wing: male without a discal sexmark.

TYPE. *Anisynta cynone* Hewitson.

This is a somewhat heterogeneous group, but the species all agree in having the characters given above: in other points they differ. *A. tasmanica, A. polysema* and *A. argenteo-ornata* are more stoutly built than the remaining species and in that respect resemble the genus *Trapezites.* But for the absence of the sexmark, *A. cynone* approaches closely to *Motasingha dominula.*

255. **Anisynta sphenosema** Meyrick & Lower. **Fig. 643, 644, 645, 646.**

Transactions Royal Society South Australia 1902, p. 92.

♂. ABOVE. Forewing dark brown with base faintly suffused olive brown: sometimes a faint dot in cell, faint traces of subapical dots, and a faint pair of discal spots in areas 2 and 3, pale yellow: cilia dark brown. Hindwing dark brown: a central area suffused olive brown: cilia dark brown.

BENEATH. Forewing brown-black: costa and apex orange-brown: dots of upper surface absent: cilia dark brown. Hindwing orange-brown: three obscure dots, in cell, in base of area 7 and in area 1a at half, red-brown: a series of faint discal dots, red-brown: cilia orange-brown, at veins faintly brown.

♀. ABOVE. Forewing brown with base faintly suffused olive brown: a small spot in cell, and three small transverse subapical spots, pale yellow: a pair of small discal spots in areas 2 and 3, pale yellow. Hindwing dark brown suffused olive brown.

BENEATH. Forewing as in male: traces of three subapical dots, pale yellow. Hindwing as in male.

LOC. Wilson's Inlet 3. Bridgetown 2. Waroona 1 2 3 12. Perth 3 4. 33♂ 28♀.

This species appears to be confined to southwestern Australia. Some examples show no traces of the pale yellow spots above, and these spots are always more or less obscured.

256. **Anisynta tillyardi** Waterhouse & Lyell. **Fig. 767, 768, 769.**

Victorian Naturalist 1912, Vol. 28, p. 223.

♂. ABOVE. Forewing rich dark brown: long hairs of basal third, barely reaching costa, orange-brown: a small subquadrate spot in end of cell, dull orange: three minute transverse subapical dots, and a pair of very small discal spots in areas 2 and 3, dull orange: rarely traces of a narrow discal streak in lower edge of area 1a, dull orange: cilia rich black, sometimes very narrowly dull orange between veins. Hindwing rich dark brown: long hairs of central and basal area, reaching dorsum but not reaching costa, orange-brown: cilia rich black, faintly edged dull orange between veins.

Beneath. Forewing brown-black: costa and apex orange-brown: cell spot as above but brighter orange: subapical dots as above: rarely a very minute obscure discal dot in area 3, dull orange: a series of obscure streaks in apex, cream: cilia cream, at veins black. Hindwing orange-brown: a series of irregular small basal and discal rings, red-brown: a broad streak in cell, a broader one in area 4-5, a broad streak in area 1a, and a streak in area 7, cream: a series of elongate subterminal spots, and a series of small terminal spots, cream: cilia cream, at veins black.

♀. Above. Forewing as in male: spots and dots much larger and often paler: an irregular discal streak in lower edge of area 1a: cilia more clearly chequered. Hindwing as in male: usually an irregular spot in end of cell, orange: cilia more clearly chequered.

Beneath. Forewing as in male: cell spot larger and bright orange: subapical dots larger, and first and second from costa cream: discal spots in areas 2 and 3 always present, usually slightly larger than above, and bright orange. Hindwing as in male.

Loc. Ebor 1 12. 60♂ 25♀. Mt. [illegible] NSW. 3000 ft (CAW) 2nd Feby 1918

Closely resembles *A. sphenosema* above, but is easily separated by the widely different hindwing beneath.

257. **Anisynta cynone** Hewitson. **Fig. 761, 762, 763.**

Exotic Butterflies, Vol. V, Plate Cyclopides I, f. 17, 1874.

♂. Above. Forewing grey-brown: a partially divided small spot in end of cell, and three transverse subapical dots, whitish: a series of small irregular discal spots in areas 1a, 2 and 3, whitish: rarely a pair of small subterminal dots in areas 4 and 5, whitish: cilia grey, at veins grey-brown. Hindwing grey-brown: cilia grey, at veins grey-brown.

Beneath. Forewing grey-brown: costa, apex and termen, yellow-brown: cell spot and subapical dots as above: three minute subterminal dots in areas 4, 5 and 6, white: cilia yellow-brown, at veins brown-black. Hindwing yellow-brown: a broad streak in base of cell and a spot in end of cell, white edged black: a spot in area 1a at half and a pair of basal dots in area 7, white edged black: a series of small discal spots, white inwardly edged black: cilia grey-brown, at veins black.

♀. Above. Forewing as in male: usually a pair of small subterminal dots in areas 4 and 5, whitish. Hindwing as in male.

Beneath as in male.

Loc. Gunbower 4. Adelaide 3. Goolwa 3. Yorketown 4. 21♂ 10♀.

The number of white spots on forewing above varies considerably in different specimens. Some males have as few as six spots, and some females as many as eleven.

258. **Anisynta argenteo-ornata** Hewitson. **Fig. 709, 710.**

Descriptions 100 new Hesperidae, p. 41, 1868.

♂. Above. Forewing brown: a spot in cell and three small transverse subapical spots, pale yellow: a pair of discal spots in areas 2 and 3, pale yellow: traces of a spot in area 1a at half, pale yellow: cilia whitish, at veins broadly brown. Hindwing brown: a central streak in area 4-5, pale yellow: cilia whitish, at veins broadly brown.

Beneath. Forewing dull brown: apex whitish: spots as above but larger: a streak in area 5, pale yellow. Hindwing brown: a streak in cell, a streak in base of area 1a, and a short streak in base of area 7, silvery white: a broad streak in area 4-5, pale yellow: a series of irregular confluent discal spots, silvery white: a series of subterminal streaks (reaching termen in areas 1a, 2, 3, 4-5 and 6), pale yellow.

♀. Above and Beneath as in male: spots slightly larger.

Loc. Perth 10 11. East Wallabi Is. 11. Geraldton. Monte Bello Is. 7 8. 7♂ 1♀.

Both our figures are from specimens taken by Com. J. J. Walker R.N. on East Wallabi Is., in the Houtman Abrolhos. Examples from Perth have the yellow spots and dots all smaller.

259. **Anisynta tasmanica** Miskin. **Fig. 750, 751.**

Proceedings Royal Society Queensland 1889, p. 149.

♂. Above. Forewing dark grey-brown: an irregular spot in end of cell, and three transverse subapical dots, white, hyaline: a pair of small discal spots in areas 2 and 3, white, hyaline: sometimes traces of an obscure dot in area 1a at onethird, and rarely of another at twothirds, whitish: cilia whitish, at veins dark grey-brown. Hindwing dark grey-brown: a pair of discal dots in areas 2 and 3, white, hyaline: cilia whitish, at veins dark grey-brown.

Beneath. Forewing grey-brown: apex whitish: spots and dots as above. Hindwing grey: hyaline dots as above, but edged grey-brown: three obscure dots, in cell, in base of area 7, and in area 1a at half, grey-brown: a series of obscure discal dots, grey-brown.

♀. Above as in male: termen much more convex.

Beneath as in male.

Loc. Ebor 12. Dorrigo 11. Illawarra. Moss Vale 12. Wandin 2 12. Gisborne 10 11. Macedon 11. Timboon (*Kershaw*) 3. Launceston 11 12. Sandford. Mt. Magnet 1. 10♂ 5♀.

We have one specimen with two additional hyaline dots on hindwing.

260. **Anisynta polysema** Lower. **Fig. 745, 754.**

Transactions Royal Society South Australia 1908, p. 311.

♂. Above. Forewing grey-brown: a small spot in cell, and three small transverse subapical spots, white: a series of three small discal spots in areas 1a, 2 and 3, white: a pair of subterminal dots in areas 4 and 5, white: cilia whitish, at veins brown. Hindwing grey-brown: cilia whitish, at veins brown.

Beneath. Forewing grey-brown: costa and apex grey: spots as above. Hindwing pale grey-brown: an obscure spot in cell, and another in base of area 7, white ringed brown: an irregular series of small irregular discal spots, white ringed brown.

♀. Above as in male: termen more convex: spots of forewing slightly larger.

Beneath as in male: spots slightly larger: spot in base of area 7 of hindwing (in our single example) absent.

Loc. Petford 2. Port Darwin 1 2 3. 2♂ 1♀.

Anisynta argina Ploetz.

Mittheilungen Naturwissenschaftlichen Verein Neu-Pommern und Rugen 1884, p. 22.

♂. Above. Forewing dark grey: base suffused greenish: two spots at end of cell, and FOUR *transverse subapical spots, white: a spot in base of area 3, another in base of area 2, and a third in area 1a at half, white: two streaks below vein 1a at half, grey: cilia white, at veins dark grey. Hindwing dark grey: base suffused greenish: a curved series of five irregular discal streaks, grey: cilia white, at veins dark grey.*

Beneath. Forewing blue-grey: spots as above: streaks below vein 1a absent. Hindwing blue-grey: a spot in cell and an irregular series of discal spots, white.

Loc. Brisbane (Ploetz).

This description is compiled from the figure and the description of Ploetz. The figure might readily pass for a poor one of *A. polysema,* were it not that the position of the spots of forewing are different, and there are four instead of three subapical dots. We are doubtful if this species is really Australian, so we have not included it in our list.

Genus **OREISPLANUS** nov.

Antennae slightly more than half the length of costa: clubs evenly bent at middle and with tips blunt though less so than in *Mesodina* and *Anisynta* (**Fig. AJ 6**). Palpi with third joint short, blunt and porrect. Hind tibiae with two pairs of spurs. Forewing with costa nearly straight and termen about twothirds the length of dorsum: vein 5 straight and about equidistant from vein 4 and from vein 6: vein 2 arising much nearer to vein 4 than to base of wing: male without a discal sexmark.

Type. *Oreisplanus munionga* Olliff.

Foodplant. *Cladium.*

There are several reasons why these two alpine species cannot be placed within any described genus. They have a similar facies to *H. ornata* but are without the sexmark in male always present in the genus *Hesperilla*: they also have a narrower forewing, and the pupae of *H. ornata* are quite unlike those of *O. perornatus*. They would spoil the homogeneity of *Mesodina*, agreeing only in the absence of the sexmark in the male. The genus *Anisynta* might possibly be extended to include them, but it already embraces species that, for the *Hesperidae*, present very considerable points of difference.

261. **Oreisplanus perornatus** Kirby. **Fig. 594, 595.**

Annals Magazine Natural History 1893, p. 437.

♂. Above. Forewing brown-black: a large ovoid spot in end of cell, orange: three confluent transverse subapical spots, pale yellow: a pair of discal spots in areas 2 and 3, and a smaller one in lower edge of area 1a, orange: a spot in lower edge of area 1a at twofifths, orange: a pair of obscured subterminal spots in areas 4 and 5, yellow: cilia yellow, at veins broadly brown-black. Hindwing black: a broad central band, orange: cilia yellow, at veins broadly brown-black.

Beneath. Forewing dull brown-black: spots as above, those of area 1a obscured, and subterminal spots larger, extended towards costa, and whitish. Hindwing white: dorsum to vein 1a, black: a large triangular spot in cell, black centred white: a subcostal spot at base, and an elongate spot in area 1a at half, black: a series of elongate discal spots, and a series of costal and subterminal spots, black. Antennae black.

♀. Above. Forewing as in male: termen more convex: spots larger. Hindwing as in male.
Beneath as in male.

Loc. Blue Mts. 10 11. Wandin 10 11. Macedon 11 12. 36♂ 29♀.

262. **Oreisplanus munionga** Olliff. **Fig. 670**

Proceedings Linnean Society N. S. Wales 1889, p. 623.

♂. Above. Forewing dark brown: a curved spot in end of cell, and three transverse subapical spots, yellow: a pair of discal spots in areas 2 and 3, and a small discal spot in lower edge of area 1a, yellow: faint traces of a series of subterminal dots from vein 4 to costa, whitish: cilia cream, at veins broadly dark brown. Hindwing dark brown: a narrow central band, orange: cilia cream, at veins broadly dark brown.

Beneath. Forewing dark brown: spots as above: subterminal dots distinct and yellow: veins in apex yellow. Hindwing yellow: dorsum to vein 1a dull black with a streak along vein 1b, yellow: a large triangular spot in cell, black centred yellow: a subcostal dot in base, and an elongate spot in area 1a before half, black: a series of discal spots, and a series of costal and subterminal dots, black. Antennae dark brown with segmental margins narrowly cream.

♀. Above. Forewing as in male: termen more convex. Hindwing as in male: central band produced along veins towards termen.
Beneath as in male.

Loc. Blue Mts. 2. Moonbar (type) 3. Mt. Kosciusko 3.2 Mt. St. Bernard 2. 8♂ 8♀.

Genus **HESPERILLA** Hewitson.

Descriptions 100 new Hesperidae, p. 37, 1868.

Antennae about twothirds the length of costa: clubs abruptly bent before the middle, and with tips sharply pointed (**Fig. AJ 7, 8**). Palpi with third joint moderate and porrect. Forewing with costa nearly straight and termen shorter than dorsum: vein 12 reaching costa well before end of cell: vein 5 nearer to vein 6 than to vein 4: vein 3 much nearer to vein 4 than to vein 2: vein 2 nearer to vein 4 than to base of wing: male with a linear discal sexmark. Hindwing with a central band of confluent spots.

Type. *Hesperilla ornata* Leach.

Foodplant. *Cladium.*

We have restricted this genus to those species with the tips of antennae sharply pointed: the clubs of antennae are usually very sharply bent, and hooked. As contrasted with those species we have placed under the genus *Toxidia*, these are much more brightly coloured, and always have a well defined band or patch on the hindwing above. The pupae of *H. ornata*, *H. picta* and *H. crypsargyra* have two long blunt projections from the head.

Kosciusko (G.A.W.) July 1920.

263. **Hesperilla ornata** Leach.

263a. **H. ornata ornata** Leach. **Fig. 602, 603.**

Zoological Miscellany I, p. 126, pl. 55, f. 1, 2, 3, 1815.

♂. Above. Forewing dull black: a spot in end of cell and produced along median, pale yellow, hyaline: three transverse subapical dots, a discal spot in area 3, and sometimes traces of another in upper edge of area 2, pale yellow, hyaline: an obscure dot in area 1a at half, whitish: cilia cream, at veins broadly dull black: a narrow discal sexmark from vein 1a to vein 4, black. Hindwing dull black: an irregular narrow central band, bright yellow: cilia cream, at tornus yellow, with veins broadly dull black.

Beneath. Forewing dull black: cell spot and subapical dots as above, but larger and paler: discal spots as above, that in area 2 extended narrowly to vein 1a: a cloudy discal spot in area 1a, whitish: a broad subcostal streak above cell spot, and a series of subterminal spots from vein 4 to vein 8, white: veins in apex white. Hindwing white: dorsum to vein 1a dull black: a large triangular spot in cell, dull black centred white: a subcostal spot near base, and an elongate spot in area 1a before half, dull black: a series of narrow discal spots, and a series of costal and subterminal spots, dull black.

♀. Above. Forewing dull black: a quadrate spot in cell, pale yellow, hyaline: three small transverse subapical spots, and a pair of discal spots in areas 2 and 3, pale yellow, hyaline: a discal spot in area 1a, and a spot in area 1a at half and often extending into lower edge of area 2, yellow: faint traces of a pair of obscure subterminal spots in areas 4 and 5, whitish. Hindwing as in male.

Beneath. Forewing dull black: hyaline spots and dots as above, but larger and paler: spots of area 1a cloudy and whitish: a very narrow and short subcostal streak above cell spot, and a series of subterminal spots from vein 4 to vein 8, white: veins in apex white. Hindwing as in male.

Loc. Brisbane. Richmond R. 1 2 3 4 9 10. Port Macquarie 10 11. Manning R. 3. Sydney 1 2 3 4 10 11 12. Blue Mts. 10 11. Moruya 12. Jindivick 12. Wandin 11 12. Macedon 11. 25♂ 27♀.
Toronto 4/17. Port Macquarie 3.4./1915. Urunga Ⓦ Oct 1920–

263b. **H. ornata monotherma** Lower. **Fig. 635, 636.**

Transactions Royal Society South Australia 1907, p. 169.

♂. Above. Forewing black: a narrow spot in end of cell, pale yellow, hyaline: three minute transverse subapical dots, and a minute discal dot in base of area 3, pale yellow, hyaline: cilia black: a narrow discal sexmark from vein 1a to vein 4, black. Hindwing black: a narrow, sometimes obscure, central band, yellow: cilia cream, with veins very broadly black.

Beneath. Forewing dull black: cell spot and discal spot as above: subapical dots larger: a subcostal streak above cell spot, and a series of subterminal spots from vein 4 to vein 8, white. Hindwing white: dorsum to vein 1a, dull black: a partially divided elongate spot in end of cell, black: a subcostal spot near base, and an elongate spot in area 1a before half, black: a series of small discal spots, and a series of subcostal and terminal spots (confluent towards tornus), black.

♀. Above. Forewing black: three minute transverse subapical dots, pale yellow, hyaline: sometimes a minute discal dot in base of area 3, and rarely a pair of minute discal dots in areas 2 and 3, pale yellow, hyaline: cilia black. Hindwing black: a narrow, sometimes obscure, central band, yellow: cilia cream with veins very broadly black.

Beneath. Forewing dull black: dots as above: a minute dot in end of cell, and a narrow subcostal streak above it, cream: a series of subterminal spots from vein 4 to costa, white. Hindwing as in male.

Loc. Cooktown (*Lower*). Kuranda 2 3 4 9 11. Herberton (*Lower*). 2♂ 6♀.

This is the northern race of *ornata*, and differs in the hyaline spots of forewing being much smaller in the male, and almost or quite absent in the female. A tendency to smaller spots is noticeable even with Richmond R. examples as compared with those taken near **Sydney.**

264. **Hesperilla picta** Leach. **Fig. 610, 611.**

Zoological Miscellany, 1, p. 126, pl. 55, f. 4, 5, 1815.

♂. Above. Forewing brown-black: a large spot in end of cell, yellow, hyaline: three small transverse subapical spots, and a discal pair of spots in areas 2 and 3, pale yellow, hyaline: a discal spot in lower edge of area 1a, and an obscure spot in same area at half, yellow: cilia brown-black: a narrow discal sexmark from vein 1a to vein 4, black. Hindwing black: a broad central band, bright yellow: cilia bright yellow, at veins brown-black.

Beneath. Forewing brown-black: apex broadly red-brown: hyaline spots as above: discal spot in area 1a, larger, cloudy and whitish: a series of small subterminal spots from vein 4 to costa, cream: a narrow terminal line, cream. Hindwing red-brown: veins, except 1a, narrowly cream: central band as above, but much narrower and cream: an irregular subterminal line and a narrow terminal line, cream.

♀. Above. Forewing as in male: spots larger, especially those of area 1a. Hindwing as in male.

Beneath as in male.

Loc. Brisbane. Richmond R.210. Port Macquarie 10 11. Sydney 1 2 3 4 9 10 11 12. Illawarra 3 4. Blue Mts. 11. Moruya 12. Bendoc 1. 37♂ 35♀. Toronto 4/17. Port Macquarie 4/1918

265. **Hesperilla crypsargyra** Meyrick. **Fig. 600, 601.**

Proceedings Linnean Society N. S. Wales 1887, p. 829.

♂. Above. Forewing brown-black: an irregular spot in end of cell, and three small transverse subapical spots, pale yellow, hyaline: a small discal spot in base of area 3, and rarely a dot in upper edge of area 2, pale yellow, hyaline: faint traces of a series of small subterminal spots above vein 4, yellowish: cilia yellow, at veins broadly brown: a narrow discal sexmark from dorsum to vein 4, black. Hindwing brown-black: a narrow, sometimes restricted, central band, bright yellow: cilia yellow, at veins narrowly brown-black.

Beneath. Forewing brown: cell veins yellow: hyaline spots and dots as above: a faint discal dot in lower edge of area 2, pale yellow: a short subcostal streak at fourfifths, and a series of small subterminal spots in areas 4 to 7, pale yellow. Hindwing dull red-brown: a basal series of irregular streaks, and postcellular veins as far as discal spots, pale yellow: a short narrow streak in middle and a large irregular spot in end of cell, silvery white: an elongate spot in area 1a at half, silvery white: a series of irregular discal spots, that in area 7 much the largest, silvery white.

♀. Above. Forewing brown-black: a quadrate spot in end of cell, and three small transverse subapical spots, pale yellow, hyaline: a pair of discal spots in areas 2 and 3, and rarely a minute dot in upper edge of area 1a, pale yellow, hyaline: a discal spot in lower edge of area 1a, and a spot in same area at half, yellow: a series of small subterminal spots above vein 4, yellowish: cilia yellow, at veins brown-black. Hindwing brown-black: a narrow central band, bright yellow: cilia yellow, at veins narrowly brown-black.

Beneath. Forewing as in male, but hyaline spots and dots as above: spots of area 1a as above, but whitish. Hindwing as in male.

Loc. Blue Mts. (above 2000ft.) 2 4 11 12. 25♂ 20♀.

266. **Hesperilla mastersi** Waterhouse. **Fig. 650, 651.**

Proceedings Linnean Society N. S. Wales 1900, p. 54, pl. 1, f. 5, 6, 7, 8.

♂. Above. Forewing brown-black faintly suffused orange-brown: a large elongate spot in end of cell, and three small transverse subapical spots, pale yellow, hyaline: a discal spot in base of area 3, and a minute discal dot in upper edge of area 2, pale yellow, hyaline: cilia red-brown: a narrow discal sexmark from dorsum to vein 4, black. Hindwing brown-black: a broad central band orange: cilia yellow, at veins brown-black.

Beneath. Forewing red-brown: hyaline spots and dots as above: an obscure discal band from vein 2 to dorsum, yellowish: a series of six irregular outer-subapical spots, those in areas 4 and 5 broadest, whitish. Hindwing red-brown: a broad streak along dorsum, and another in area 1a, cream: a spot in upper edge of cell at half, and an elongate spot in base of area 7, whitish: a patch in end of cell and beyond, cream narrowly streaked brown: a series of small obscure discal spots, brown-black: a series of irregular subterminal patches, cream, and a series of irregular costal patches, whitish.

[illegible]

[illegible]

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[illegible]

[illegible]

♀. Above. Forewing as in male: cell spots and subapical small spots as in male: a pair of discal spots in areas 2 and 3, pale yellow, hyaline. Hindwing as in male.

Beneath. Forewing red-brown: hyaline spots as above: discal band, and outer-subapical spots, as in male. Hindwing as in male.

Loc. Loftus 3. Illawarra 1 2. Blue Mts. 11. Moruya 12. 5♂ 4♀.

One of the rarest as well as one of the most handsome and distinctive of the Australian Hesperids: less than a dozen examples have yet been captured.

267. **Hesperilla idothea** Miskin. **Fig. 716, 717, 718.**

Proceedings Royal Society Queensland 1889, p. 152.

♂. Above. Forewing brown: a large spot in end of cell and broadly produced along median, pale yellow, hyaline: usually three transverse subapical dots, pale yellow, hyaline: a discal spot in area 3 and sometimes a minute discal dot in upper edge of area 2, pale yellow, hyaline: cilia brown with a dot at each vein, dark brown: a discal sexmark from dorsum to vein 4, black. Hindwing brown: a variable central suffusion, yellow-brown: cilia yellow-brown with a dot at each vein, brown.

Beneath. Forewing dark brown: costa, apex and termen dull orange-brown: hyaline spots and dots as above: a band of discal spots from vein 3 to dorsum, pale yellow, and extending as a whitish patch to tornus. Hindwing dull orange-brown: an incomplete series of discal dots, brown-black.

♀. Above. Forewing dark brown: a large spot in end of cell, and three transverse subapical dots, yellow, hyaline: a pair of large elongate discal spots in areas 2 and 3, yellow, hyaline: a discal spot in upper and another in lower edge of area 1a, orange: sometimes a spot in area 1a at half, orange: cilia brown, at veins dark brown. Hindwing dark brown: a large central area, diminishing to base, bright orange: cilia yellow-brown, at veins narrowly brown.

Beneath. Forewing brown-black: costa, apex and termen, orange-brown: hyaline spots and dots as above: a broad discal spot in area 1a, pale yellow, and extending as a whitish patch to tornus. Hindwing as in male.

Loc. Dorrigo 12. Blue Mts. 1 10 11 12. Healesville 11. Wandin 1 11 12. Macedon 1 2 12. Scottsdale 1. Mt. Lofty 11. 26♂ 10♀.

The female differs from all others of the subfamily in the extension of the orange band of hindwing to the base. This, with the very large hyaline spots of forewing, gives it a most handsome appearance.

268. **Hesperilla chaostola** Meyrick. **Fig. 690, 691, 700.**

Proceedings Linnean Society N. S. Wales 1887, p. 830.

♂. Above. Forewing brown: a quadrate spot in end of cell, pale yellow, hyaline: three transverse subapical dots, whitish, hyaline: a discal spot in area 3, with rarely a minute dot in upper edge of area 2, pale yellow, hyaline: a pair of subterminal dots in areas 4 and 5, whitish, hyaline: cilia brown: a discal sexmark from dorsum to vein 3, black. Hindwing brown: a central patch in area 4-5 and in base of area 3, yellowish: an irregular series of obscure discal dots, yellowish: cilia grey, at veins brown.

Beneath. Forewing brown: apex suffused lilacine grey: cell orange: hyaline spots and dots as above: a discal spot in area 2, and a divided discal spot in area 1a, pale yellow. Hindwing brown suffused lilacine grey: three obscure rings, in upper edge of cell, near base of area 7, and near base of area 1a, brown: a series of obscure discal rings, brown.

♀. Above. Forewing brown: an elongate spot in end of cell, and three large discal spots in areas 1a, 2 and 3, pale yellow, hyaline: three elongate transverse subapical dots, and a pair of small subterminal spots in areas 4 and 5, whitish, hyaline: cilia brown. Hindwing as in male: central patch more clearly yellow.

Beneath. Forewing brown: apex suffused lilacine grey: cell broadly yellow: hyaline spots and dots as above. Hindwing brown suffused pale lilacine grey: three rings, in upper edge of cell, near base of area 7, and towards base of area 1a, brown: a series of elongate discal rings, brown.

Loc. Blue Mts. 11. Wandin 10 11. Huonville 10. 21♂ 10♀. Mac. 11.

The terminal joint of the palpi is very much longer than in the other species of the genus.

269. **Hesperilla donnysa** Hewitson. **Fig. 633, 634.**

Descriptions 100 new Hesperidae, p. 39, 1868.

♂. ABOVE. Forewing brown: a spot in end of cell, yellow, hyaline: three transverse subapical dots, pale yellow, hyaline: a pair of small discal spots in areas 2 and 3, with that in area 2 always the larger, pale yellow, hyaline: often a discal dot in lower edge, and sometimes a small discal dot in upper edge of area 1a, pale yellow: cilia grey-brown: a narrow discal sexmark from before vein 1a to beyond vein 3, dull black. Hindwing brown: a small central patch, yellow: cilia grey, at veins brown.

BENEATH Forewing brown: costa narrowly and apex broadly, grey suffused lilacine: cell broadly pale yellow: hyaline spots and dots as above: a cloudy discal spot in area 1a obscurely extending to tornus, whitish. Hindwing grey suffused lilacine: a small spot in cell, brown sometimes centred pale grey: a series of small discal spots or dots, brown, those in areas 2, 3 and 6 sometimes centred pale grey.

♀. ABOVE. Forewing brown: hyaline spots and dots as in male, but larger: a discal spot in lower edge, and sometimes a small discal spot in upper edge of area 1a, pale yellow: cilia grey-brown. Hindwing as in male with central patch slightly larger.

BENEATH as in male: spots and dots slightly larger.

LOC. Moreton Bay (type). Sydney 3 10 12. Blue Mts. 11. Illawarra 10. Colo Vale 2. Wandin 1 11 12. Oakleigh 1 3 10 11. Gisborne 1. Scottsdale 1. Mt. Wellington 2. Zeehan 2. Mt. Magnet 1 2. 59♂ 40♀.

This is a wide ranging, abundant, and somewhat variable species. We have a single Wandin female with two additional dots in areas 4 and 5 of forewing above, connecting the subapical dots with the discal spots: beneath, the cell spot and discal dots of hindwing are small, and whitish instead of brown, and they show clearly above as pale yellow dots. Examples from the volcanic plains near Altona Bay, Vic. are all suffused pale yellow above, and the spots of forewing are of slightly more than average size. Tasmanian examples, including those from the slopes of Mt. Wellington and Mt. Magnet, have the spots yellow instead of pale yellow, and the central patch of hindwing orange instead of yellow.

270. **Hesperilla chrysotricha** Meyrick & Lower.

270a. **H. chrysotricha chrysotricha** Meyrick & Lower. **Fig. 631, 776, 777.**

Transactions Royal Society South Australia 1902, p. 59.

♂. ABOVE. Forewing brown: a spot in end of cell, yellow, hyaline: three large transverse subapical dots, pale yellow, hyaline: a discal spot in area 3, and sometimes a minute discal spot in upper edge of area 2, pale yellow, hyaline: cilia grey-brown: a narrow discal sexmark from before vein 1a to beyond vein 3, black. Hindwing brown: a small central patch, deep yellow: cilia grey, at veins brown.

BENEATH. Forewing brown: apex broadly dull red-brown: base of cell, and costa to beyond cell, yellow: hyaline spots and dots as above: a large discal spot in area 2, and an obscure divided one in area 1a, whitish: dorsum towards tornus, whitish. Hindwing dull red-brown: a small spot in cell, brown centred silvery white: a series of small discal spots, brown, those in areas 2, 3 and 6, centred silvery white.

♀. ABOVE. Forewing brown: cell spots and subapical dots as in male: a discal spot in area 3, and a slightly larger discal spot in area 2, pale yellow, hyaline: a discal spot in lower edge of area 1a, pale yellow: cilia grey-brown. Hindwing as in male.

BENEATH as in male.

LOC. Albany (type). Stirling Ranges 10. Wilson's Inlet 11. Waroona 2 10 11. Northampton (*Lower*). 10♂ 4♀.

This might easily be mistaken for a western race of *H. donnysa*, but an examination of the genitalia shows its much closer affinity with *cyclospila*. It is easily separated from *H. donnysa* by the minute discal dot of area 2 of forewing, and by the red-brown colour beneath.

270b. **H. chrysotricha cyclospila** Meyrick & Lower. **Fig. 632.**

Transactions Royal Society South Australia 1902, p. 63.

♂. ABOVE. Forewing brown: a small spot in end of cell, yellow, hyaline: three transverse subapical dots, pale yellow, hyaline: a discal spot in area 3, and a much smaller discal spot in upper edge of area 2, pale yellow, hyaline: cilia grey-brown: a narrow discal sexmark from before vein 1a to beyond vein 3, black. Hindwing brown: a small central patch, yellow: cilia grey-brown.

Richmond R. 210. GAN 22 Moe V. Nov. Ecc.

[illegible]
[illegible]

Beneath. Forewing brown: apex broadly dull brown: base of cell yellow: hyaline spots and dots as above, with that in area 2 much larger: dorsum towards tornus, whitish. Hindwing brown: a small spot in cell, dark brown centred silvery white: a series of small discal spots, dark brown, those in areas 1a, 2, 3 and 5, centred silvery white.

♀. Above. Forewing as in male: sexmark absent. Hindwing as in male.

Beneath as in male.

Loc. Fernshaw (*Kershaw*). Bridport 12. Port Lincoln (type) 11. 2♂ 1♀.

271. **Hesperilla andersoni** Kirby. **Fig. 770, 771, 772.**

Annals Magazine Natural History 1893, p. 434.

♂. Above. Forewing dark brown: a spot in cell and produced broadly along median, yellow, hyaline: three transverse subapical dots, a small discal spot in area 3, and a discal dot in upper edge of area 2, pale yellow, hyaline: cilia brown: a discal sexmark from before vein 1a to vein 3, black. Hindwing dark brown: a central patch, sometimes obscure, in area 4-5, yellowish: cilia yellow-grey.

Beneath. Forewing brown: costa and apex broadly dull red-brown: dorsum grey: hyaline spots and dots as above, that in area 2 larger and whitish. Hindwing dull red-brown: three obscure rings, in cell, in base of area 7, and in area 1a at half, brown: a discal series of obscure irregular rings, brown.

♀. Above. Forewing dark brown: a large spot in end of cell and produced slightly along median, yellow, hyaline: three transverse subapical dots, a discal spot in area 2, and a slightly smaller discal spot in area 3, pale yellow, hyaline: a discal dot in lower edge of area 1a, yellow: cilia brown. Hindwing as in male.

Beneath as in male: hyaline spots and dots as above.

Loc. Wilson's Peak. Dorrigo 11. Illawarra. Wandin 11 12. Healesville 12. 18♂ 7♀.

This species has a superficial resemblance above to *T. doubledayi* Felder.

Genus **TOXIDIA** Mabille.

Annales Societie Entomologique Belgique 1891, p. lxxx.

Antennae about twothirds the length of costa: clubs bent before the middle and with tips pointed. Palpi with third joint moderate and porrect. Forewing with costa nearly straight and termen shorter than dorsum: vein 5 nearer to vein 6 than to vein 4: vein 2 nearer to vein 4 than to base of wing: male with a linear discal sexmark. Hindwing spotless. (**Fig. AKa. AM**).

Type. *Toxidia tyrrhus* Mabille.

This genus takes the place of Boisduval's *Telesto,* which name is preoccupied. We use it in a much more extended sense than suggested by Watson. Its separation from *Hesperilla* makes that huge genus less unwieldly: though it differs but little in structure, the species of *Toxidia* all have a facies easily distinguished: the antennae are less sharply pointed, and the clubs of antennae are gradually instead of abruptly bent. *T. peroni* is the only species whose pupa we know, and it differs from known *Hesperilla* pupae in the head being smooth. Mabille's genus *Oxytoxia* (Genera Insectorum, p. 93, 1904) founded upon *T. doubledayi,* we regard as insufficiently distinct from *Toxidia.*

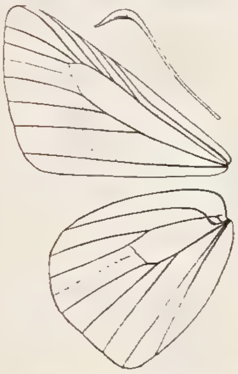

Fig. AM. Wing venation and antenna of *Toxidia peroni.* (enlarged).

272. **Toxidia peroni** Latreille. **Fig. 620, 621, 742.**

Encyclopedie Methodique Vol. IX. p. 763. 1819.

♂. Above. Forewing brown: a very narrow spot in end of cell and produced along median, whitish, hyaline: three transverse subapical dots, and a discal dot in area 3, whitish, hyaline: cilia grey-brown: a broad oblique discal sexmark from before vein 1a to beyond vein 3, black. Hindwing brown: cilia grey-brown.

Beneath. Forewing grey-brown: central area brown: hyaline dots as above: a faint discal dot in area 3, whitish. Hindwing grey-brown: sometimes faint traces of three rings in cell, in base of area 7 and in area 1a at half, brown: sometimes traces of a series of discal rings, brown.

♀. Above. Forewing brown: a spot in end of cell, and three transverse subapical dots, whitish, hyaline: a large discal spot in area 2, and a smaller one in area 3, whitish, hyaline: cilia grey-brown. Hindwing brown: cilia grey-brown.

Beneath. Forewing grey-brown: central area brown: hyaline spots and dots as above. Hindwing brown: traces of three rings in cell, in base of area 7, and in area 1a at half, brown: traces of a series of discal rings, brown.

Loc. Kuranda 1 2 3 6 8 10. Herberton 1 2. Mackay 1 2 3 8 9. Rockhampton 9. Brisbane 4 10. Stradbroke Is. 10. Richmond R.3,5 9 10 11. Bellingen 11. Port Macquarie 10. Manning R. 3. Sydney 1 2 3 4 9 10 11 12. Colo Vale 2. Moruya 1. Mt. St. Bernard 1. 43♂ 33♀.

Toronto (W.A.Fil.) 29.9.20 Toronto 4/17 Port Macquarie 3.4/1915 Urunga (W) Oct 1920.

An abundant and wide ranging species, showing very slight geographical variation.

273. **Toxidia malindeva** Lower. **Fig. 740, 741, 749.**

Transactions Royal Society South Australia 1911, p. 129.

♂. Above. Forewing dull brown: a spot in end of cell and slightly produced along median, pale yellow, hyaline: three transverse subapical dots, and a discal spot in area 3, pale yellow, hyaline: sometimes traces of a discal spot in area 2, whitish: cilia dull brown: a narrow discal sexmark from vein 1a to vein 4, black. Hindwing dull brown: cilia grey-brown.

Beneath. Forewing dull grey-brown: central area dull brown: dorsum whitish: hyaline spots and dots as above: a discal spot in area 2 and traces of another in area 1a, whitish. Hindwing dull grey-brown: usually a pair of small discal spots in areas 2 and 3, brown-black.

♀. Above. Forewing dull brown: a spot in cell, and three transverse subapical dots, whitish, hyaline: a discal spot in area 2, and a smaller one in area 3, whitish, hyaline: a discal spot in lower edge of area 1a, pale yellow: cilia dull brown. Hindwing dull brown: cilia grey-brown.

Beneath as in male.

Loc. Herberton 1 2 11. 11♂ 3♀.

Bears a superficial resemblance to *T. peroni*, but the sexmark of male is much narrower, and the dark discal dots of hindwing beneath at once distinguish it.

274. **Toxidia crypsigramma** Meyrick & Lower. **Fig. 639, 640.**

Transactions Royal Society South Australia 1902, p. 81.

♂. Above. Forewing grey-brown: rarely traces of a spot in end of cell, whitish: usually traces of up to three transverse subapical dots, whitish: a faint cloudy discal dot in base of area 3, whitish: cilia grey-brown: a broad oblique discal sexmark from vein 1a to vein 3, black. Hindwing grey-brown: cilia greyish.

Beneath. Forewing pale grey-brown: spots as above: often an obscure discal spot in area 2, whitish. Hindwing pale grey-brown.

♀. Unknown.

Loc. Herberton (type). Brisbane 2 3 4 11. 14♂.

The whitish spots both above and beneath are obscure and variable, and in some examples these spots differ on the lefthand wings from those on the righthand wings. **Fig. 639** is not a good one: the spots are too clear and too large, and the cell spot there shown is nearly always absent. We anticipate the female will be very similar to a small female *peroni*.

Stanwell Park, Apl 1916.

[illegible]

[illegible] dark brown [illegible] transverse [illegible] with a grey [illegible]. Hindwing [illegible]

[illegible] red brown.

[illegible] dark brown [illegible] irregular spot [illegible]

[illegible]

Richmond R. 10.

275. **Toxidia sexguttata** Herrich-Schaeffer. **Fig. 641, 642.**

Stettiner Entomologische Zeitung 1869, p. 80, pl. 3, fig. 16.

♂. Above. Forewing brown: sometimes three obscure transverse subapical dots, pale yellow: a discal spot in area 3, and a narrow sometimes divided, discal spot in area 2, pale yellow: cilia whitish, at veins brown: a very narrow discal sexmark from vein 1a to vein 3, dull black. Hindwing brown: cilia whitish, at veins narrowly brown.

Beneath. Forewing brown: costa and apex broadly yellow-brown: tornus whitish: spots and dots as above. Hindwing pale yellow-brown: cilia pale yellow, at veins brown.

♀. Above. Forewing brown: usually three cloudy transverse subapical dots, pale yellow: a quadrate discal spot in area 2, a smaller one in area 3, and a still smaller one in lower edge of area 1a, pale yellow: cilia whitish, at veins brown.

Beneath. Forewing brown: costa and apex broadly yellow-brown: tornus whitish: subapical dots obscure: discal spots in areas 2 and 3 as above. Hindwing as in male.

Loc. Banks Is. 2 3. Cairns 2. Rockhampton (type). 7♂ 2♀. Westwood Q. (ANB) 17.9.24

276. **Toxidia doubledayi** Felder. **Fig. 608, 609.**

Verhandlungen Zoologisch-botanischen Gesellschaft Wien 1862, p. 491.

♂. Above. Forewing dark brown: a narrow spot in end of cell and produced broadly along median, pale yellow, hyaline: three transverse subapical dots, whitish, hyaline: a small discal spot in area 3, and sometimes a minute one in upper edge of area 2, pale yellow, hyaline: cilia brown: a narrow discal sexmark from before vein 1a to vein 3, grey edged black. Hindwing dark brown: cilia yellow-grey.

Beneath. Forewing dark red-brown: apex, termen and dorsum suffused lilacine: hyaline spots and dots as above, that in area 2 always present, larger and whitish. Hindwing dark red-brown suffused lilacine: three obscure spots, in cell, in base of area 7, and in area 1a before half, red-brown: a series of discal spots, red-brown.

♀. Above. Forewing dark brown: an irregular spot in end of cell, pale yellow, hyaline: three transverse subapical dots, whitish, hyaline: a discal spot in area 2, and a smaller one in area 3, pale yellow, hyaline: cilia brown. Hindwing as in male.

Beneath. Forewing dark red-brown: apex, termen, and dorsum broadly, suffused lilacine: hyaline spots and dots as above. Hindwing dark red-brown: termen suffused lilacine: a broad central streak from basal half of dorsum to apical half of termen, lilacine white: three dots, in cell, in base of area 7, and in area 1a before half, dark brown: a band of discal spots, dark brown.

Loc. Herberton 11. Brisbane 10. Stradbroke Is. 10. Port Macquarie 10. Manning R. 3. Sydney 1 2 3 4 9 10 11 12. Illawarra 2 3 10. Penrith 10. Blue Mts. 10. Moruya 12. Pambula 12. Wandin 10 11 12. Healesville 11. Marysville 11. 38♂ 26♀. Toronto 4/17. Umunga (W.) vic 1920.

Examples are sometimes met with in which the discal sexmark of male is dull white rather than grey: these can be at once distinguished from *T. leucostigma* by the sexmark only reaching vein 3: the silky white narrow waved sexmark of *leucostigma* invariably reaches vein 4. *Carystus vallio* Mabille, may be a synonym of this species: Mabille has omitted it altogether from the Genera Insectorum.

277. **Toxidia leucostigma** Meyrick & Lower.

277a. **T. leucostigma leucostigma** Meyrick & Lower. **Fig. 616, 617.**

Transactions Royal Society South Australia 1902, p. 73.

♂. Above. Forewing dark brown: a small spot in end of cell and produced narrowly along median, pale yellow, hyaline: three minute transverse subapical dots, whitish, hyaline: a small discal spot in area 3, and a smaller one in upper edge of area 2, pale yellow, hyaline: cilia brown: a narrow waved discal sexmark from dorsum to vein 4, silky white obscurely edged brown-black. Hindwing dark brown: cilia red-brown.

Beneath. Forewing dark brown: costa and apex broadly red-brown: dorsum obscurely whitish: hyaline spots and dots as above. Hindwing red-brown: a series of three obscure spots, in cell, in base of area 7, and in area 1a before half, brown: a series of obscure discal spots, brown.

♀. Above. Forewing dark brown: a spot in end of cell, pale yellow, hyaline: three transverse subapical dots, whitish, hyaline: a large discal spot in area 2 and a smaller one in area 3, pale yellow, hyaline: cilia brown. Hindwing as in male.

Beneath. Forewing dark brown: costa and apex broadly red-brown: dorsum obscurely whitish: hyaline spots and dots as above. Hindwing as in male.

Loc. Brisbane. Richmond R. 234 9 10. Manning R. 3. 21♂ 14♀. Urunga (W) Oct 1920.

277b. T. leucostigma parasema Lower. Fig. 637, 638.

Transactions Royal Society South Australia 1908, p. 312.

♂. Above. Forewing brown-black: sometimes a faint streak in middle of cell, whitish: sometimes three minute transverse subapical dots, whitish, hyaline: a discal dot in base of area 3, and sometimes a smaller one in upper edge of area 2, whitish, hyaline: cilia brown: a narrow waved discal sexmark from dorsum to vein 4, whitish edged black. Hindwing dark brown: cilia red-brown.

Beneath. Forewing red-brown: central area obscurely dark brown: a faint streak in middle of cell, whitish: hyaline dots as above, with traces of a second discal dot in area 2, whitish. Hindwing red-brown slightly suffused lilacine white: faint traces of three obscure spots, in cell, in base of area 7, and in area 1a before half, red-brown: traces of a series of discal spots, red-brown.

♀. Above. Forewing brown-black: sometimes three minute transverse subapical dots, whitish, hyaline: a discal spot in area 2 and a smaller one in area 3, whitish, hyaline: cilia brown. Hindwing dark brown: cilia brown.

Beneath. Forewing as in male: hyaline spots and dots as above. Hindwing as in male.

Loc. Kuranda 1 2 3 4 5 9 11 12. Herberton 11 12. 12♂ 8♀.

278. Toxidia parvula Ploetz. Fig. 626, 627.

Stettiner Entomologische Zeitung 1884, p. 379.

♂. Above. Forewing dull brown: a narrow spot across end of cell, and three transverse subapical dots, whitish, hyaline: a discal dot in area 3, whitish, hyaline: cilia grey-brown: a broad discal sexmark from before vein 1a to vein 4, dull black inwardly edged black. Hindwing dull brown: cilia grey-brown.

Beneath. Forewing dull brown suffused grey: dorsum whitish: hyaline spot and dots as above: a discal dot in area 2, whitish. Hindwing grey-brown: three obscure rings, in cell, in base of area 7, and in area 1a before half, brown: a band of discal rings, brown.

♀. Above. Forewing dull brown: cell spot and subapical dots as in male: a pair of small discal spots in areas 2 and 3, whitish, hyaline: usually a small spot in lower edge of area 1a, whitish: cilia brown. Hindwing as in male.

Beneath. Forewing as in male: hyaline spots and dots as above. Hindwing as in male.

Loc. Kuranda 2. Mackay. Rockhampton 2. Brisbane 4 10. Stradbroke Is. 10. Richmond R. 2 10. Dorrigo 12. Port Macquarie 10. Manning R. 3 10. Sydney 1 2 3 4 9 10 11 12. Illawarra 3 4. Moruya 11 12. Lake Tyers 12. Wandin 10 11. Healesville 11. 46♂ 24♀.
Toronto 4/17. Port Macquarie 3.4.1915 Urunga (W) Oct 1920.

279. Toxidia tyrrhus Mabille. Fig. 618, 619.

Annales Societie Entomologique Belgique 1891, p. lxxx.

♂. Above. Forewing dark dull brown: sometimes up to three minute transverse subapical dots, whitish, hyaline: cilia brown: a broad oblique discal sexmark from vein 1a to just beyond vein 3, greyish white. Hindwing dark brown: cilia greyish brown.

Beneath. Forewing dark dull brown: apex sometimes slightly suffused whitish: dorsum obscurely greyish: hyaline dots as above. Hindwing dark brown suffused greyish: faint traces of a cell spot and a series of discal spots, dark brown.

♀. Above. Forewing dark dull brown: often three minute transverse subapical dots, whitish, hyaline: sometimes a discal dot in base of area 3, whitish, hyaline: cilia brown. Hindwing dull dark brown: cilia brown.

Beneath. Forewing dark brown: dorsum obscurely greyish: hyaline dots as above. Hindwing as in male.

Loc. Cape York 3 4 5 12. Cooktown 10. Kuranda 1 2 3 5 11 12. Mt. Molloy 12. Herberton 1 12. Mackay 1. 38♂ 26♀. Westwood Q. 12.10.21.

[illegible]

[illegible] and beyond vein [illegible]

[illegible] and in cell [illegible] brown [illegible]

[illegible]

[illegible] 2 3 4 [illegible]

[illegible] vein 5 nearer to vein 6 [illegible] with a long discal sexmark. [illegible]

[illegible] form a distinct group of similar insects [illegible]

[illegible]

[illegible] dark grey-brown; base [illegible] spot in base of area 3, and a [illegible] narrow discal [illegible] yellow [illegible] brown.

[illegible] a discal spot in area 3 [illegible] small discal spot on lower edge of cell [illegible]

[illegible] brown. Hindwing [illegible] brown [illegible]

280. **Toxidia melania** Waterhouse. **Fig. 667, 668, 669.**

Victorian Naturalist 1903, p. 54.

♂. Above. Forewing brown-black: very rarely faint traces of up to three transverse subapical dots, and a discal dot in area 3, whitish: cilia brown-black: a very narrow oblique discal sexmark from before vein 1a to beyond vein 3, whitish narrowly edged inwardly with black. Hindwing brown-black: cilia greyish white.

Beneath. Forewing brown: central area dark brown: dorsum grey: rarely a discal dot in area 3, whitish. Hindwing brown faintly suffused grey: traces of three obscure rings, in cell, in base of area 7, and in area 1a before half, brown: traces of a series of discal rings, brown centred grey.

♀. Above. Forewing brown-black: a pair of discal dots in areas 2 and 3, white, hyaline: cilia brown-black. Hindwing brown-black: cilia grey.

Beneath. Forewing brown: central area dark brown: dorsum grey: hyaline dots as above. Hindwing as in male.

Loc. Kuranda 1 2 3 4 12. Herberton 1. 43♂ 19♀.

Resembling *T. maykora* Ploetz from the Aru Is., which is a darker species with a less oblique sexmark.

Genus **NEOHESPERILLA** nov.

Antennae about twothirds the length of costa: clubs abruptly bent before the middle and with tips pointed (**Fig. AJ 9, 10**). Palpi with third joint moderate and porrect. Forewing with costa nearly straight and termen shorter than dorsum: vein 5 nearer to vein 6 than to vein 4: vein 2 nearer to vein 4 than to base of wing: male with a linear discal sexmark. Hindwing with one or two small hyaline discal spots.

Type. *Neohesperilla crocea* Miskin.

These four species form a natural group of similar facies, and their separation helps to relieve the large genus *Hesperilla*. Knowledge of their early life stages will almost certainly provide further points of difference.

281. **Neohesperilla crocea** Miskin. **Fig. 647, 655, 753.**

Proceedings Royal Society Queensland 1889, p. 150.

♂. Above. Forewing dark grey-brown: base faintly suffused yellow-brown: a spot in end of cell and produced narrowly along median, whitish, hyaline: three transverse subapical dots, whitish, hyaline: a small discal spot in base of area 3, and a narrow one across area 2, whitish, hyaline: cilia brown, at tornus faintly yellow: a narrow discal sexmark from dorsum to vein 4, black. Hindwing dark grey-brown faintly suffused yellow-brown: a pair of small discal spots in areas 2 and 3, whitish, hyaline: cilia yellow-brown.

Beneath. Forewing yellow-brown: dorsum broadly grey-brown: hyaline spots and dots as above and outwardly edged brown. Hindwing yellow-brown with a patch at tornus, brown: hyaline spots as above and outwardly edged brown: sometimes an obscure discal dot in area 6, brown.

♀. Above. Forewing dark grey-brown: a spot in end of cell and three large transverse subapical dots, whitish, hyaline: a discal spot in area 2 and a smaller one in base of area 3, whitish, hyaline: sometimes a small discal spot in lower edge of area 1a, pale yellow: cilia brown at tornus faintly yellow. Hindwing dark grey-brown suffused olive brown: a small discal spot in area 3 and usually another in area 2, whitish, hyaline: cilia yellow-brown, at veins obscurely brown.

Beneath. Forewing olive brown: dorsum broadly grey-brown: hyaline spots and dots as above, outwardly edged brown. Hindwing olive brown with a patch at tornus, brown: an obscure spot in cell, brown: a series of obscure discal spots, brown, those in areas 2 and 3 centred whitish, hyaline.

Loc. Prince of Wales Is. 5 6. Banks Is. 2. Cooktown 10. Cairns 6 8 10. Kuranda 1 2 3 4 5 6 7 8 9 11 12. Atherton 3. Herberton 2. Townsville 11. Brisbane (type). Darwin 1 2 9. 26♂ 35♀.

282. **Neohesperilla xiphiphora** Lower. **Fig. 656.**

Transactions Royal Society South Australia 1911, p. 130.

♂. Above. Forewing dark grey-brown suffused orange-brown: a spot in cell and produced along median, whitish, hyaline: three transverse subapical dots, and a pair of small discal spots in areas 2 and 3, whitish, hyaline: cilia yellow-brown, at veins brown: a broad discal sexmark from before vein 1a to vein 4, black. Hindwing dark grey-brown suffused orange-brown: a small discal spot in area 3, and usually another in area 2, whitish, hyaline: cilia yellow-brown, at veins brown.

Beneath. Forewing orange-brown: dorsum broadly greyish brown: hyaline spots and dots as above and edged greyish brown. Hindwing orange-brown: tornus narrowly brown: a small obscure spot in cell, brown: a series of small discal spots brown, those in areas 2 and 3 centred whitish, hyaline.

♀. Above. Forewing grey-brown: a spot in cell, and three large transverse subapical dots, whitish, hyaline: a discal spot in area 2, and a smaller one in base of area 3, whitish, hyaline: a small discal spot in lower edge of area 1a, pale yellow: cilia yellow-brown, with a dot at each vein, brown. Hindwing grey-brown: hyaline spot or spots as in male: cilia yellow-brown, at veins brown.

Beneath as in male but slightly paler.

Loc. Cape York 1. Thursday Is. 3 12. Banks Is. 2. Kuranda 2. Herberton 2. Daly R. 4. Darwin 1 2 3 4 11. 12♂ 9♀.

Very similar to *N. crocea* but at once separated by its smaller size, chequered cilia, and broader sexmark.

283. **Neohesperilla senta** Miskin. **Fig. 665, 666, 752.**

Synonymical Catalogue Rhopalocera Australia, Supplement, 1891.

♂. Above. Forewing dark grey-brown: base suffused orange-brown: a spot in cell and sometimes slightly produced along median, whitish, hyaline: three transverse subapical dots, whitish, hyaline: a discal spot in area 2 (sometimes divided by the sexmark), and a smaller one in area 3, whitish, hyaline: rarely a discal spot in upper edge of area 1a, pale yellow: cilia yellow-brown, at veins broadly brown: a discal sexmark from dorsum to vein 4, black. Hindwing dark grey-brown: base suffused orange-brown: an obscure spot in cell, a discal spot in area 3 and another in area 6, pale yellow: cilia pale yellow, at veins broadly brown.

Beneath. Forewing orange-brown: dorsum broadly grey-brown: hyaline spots and dots as above and edged grey-brown: sometimes an inner-discal spot in area 1a, whitish: a pair of outer-discal spots in areas 4 and 5, whitish. Hindwing orange-brown with a patch at tornus, dark brown: three small spots, in cell, in base of area 7, and in area 1a at half, pale yellow ringed brown: a series of irregular discal spots, pale yellow ringed brown.

♀. Above. Forewing dark grey-brown: a spot in cell, and three large transverse subapical dots, whitish, hyaline: a large elongate discal spot in area 2, and a smaller one in area 3, whitish, hyaline: sometimes a pair of outer-discal spots in areas 4 and 5, whitish, hyaline: sometimes an inner-discal spot in area 1a, pale yellow: cilia yellow-brown, at veins broadly brown. Hindwing dark grey-brown: a spot in cell, a discal spot in area 3, and another in area 6, pale yellow: often three additional discal dots, one in area 2 and a pair in area 4-5, pale yellow: cilia pale yellow, at veins broadly brown.

Beneath. Forewing orange-brown: dorsum broadly grey-brown: hyaline spots and dots as above and edged grey-brown: a variable discal spot or streak in area 1a, whitish: a pair of outer-discal dots in areas 4 and 5, whitish. Hindwing as in male: spots larger and sometimes slightly elongate.

Loc. Cooktown (*Lower*). Kuranda 1 2 3 9 10 11 12. Herberton (type). 11♂ 7♀.

284. **Neohesperilla xanthomera** Meyrick & Lower. **Fig. 673, 674, 675.**

Transactions Royal Society South Australia 1902, p. 80.

♂. Above. Forewing dark grey-brown: base suffused yellow-brown: a spot in end of cell and produced along median, pale yellow, hyaline: three small transverse subapical spots, pale yellow, hyaline: a discal spot in area 2 (divided by the sexmark), and another in area 3, pale yellow, hyaline: an inner discal spot in area 1a, pale yellow: cilia whitish, at veins brown: a discal sexmark from dorsum to vein 4, dull black edged black. Hindwing dark grey-brown: a central area suffused yellow-brown: cilia whitish, at veins brown.

Beneath. Forewing dark grey-brown: costa, apex and termen suffused yellow-brown: hyaline spots as above. Hindwing yellow-brown: dorsum to vein 1a, dull yellow-brown: tornus narrowly dark grey-brown.

♀. Above. Forewing dark grey-brown suffused yellow-brown: a spot in end of cell, yellow, hyaline: subapical spots as in male: an elongate discal spot in area 2, and a smaller one in area 3, pale yellow, hyaline: an inner-discal spot in area 1a, pale yellow: cilia whitish, at veins brown. Hindwing as in male.

Beneath. Forewing grey-brown: costa, apex and termen suffused pale yellow-brown: hyaline spots as above. Hindwing pale yellow-brown: dorsum to vein 1a, dull yellow-brown.

Loc. Kuranda 1 3. Herberton 1. Percy Is. 4. Brisbane 1 10 11 12. Esk. 4♂ 6♀.

Genus **MOTASINGHA** Watson.

Proceedings Zoological Society London 1893, p. 73.

Antennae about twothirds the length of costa: clubs abruptly bent before the middle and with tips blunt (**Fig. AJ 11, 12**). Palpi with third joint short and blunt. Forewing with costa nearly straight and termen shorter than dorsum: vein 5 slightly nearer to vein 6 than to vein 4: vein 3 nearer to vein 4 than to vein 2: vein 2 nearer to vein 4 than to base of wing: male with a linear discal sexmark.

Type. *Motasingha dirphia* Hewitson.

Most of the species we have placed under this genus have the third joint of the palpi somewhat longer than in the type: the clubs of the antennae are also slightly different, but they all agree in being bent before the middle, and in having the tips blunt.

285. **Motasingha dirphia** Hewitson. **Fig. 628, 629, 630.**

Descriptions 100 new Hesperidae, p. 38, 1868.

♂. Above. Forewing brown: base suffused yellow-brown: a partially divided spot in end of cell, pale yellow: up to three obscured transverse subapical dots, pale yellow: a small discal spot in area 3, and rarely a smaller one in upper edge of area 2, pale yellow: cilia yellow-brown: a discal sexmark (usually interrupted at each vein) from dorsum to vein 4, black. Hindwing brown: a variable central area suffused yellow-brown: sometimes a small obscure spot in cell, pale yellow: cilia yellow-brown.

Beneath. Forewing dull brown: costa and apex suffused dull reddish brown: cell spot as above: sometimes a single (the lowest of the usual three) subapical dot, pale yellow: a pair of discal spots in areas 3 and 2, and a smaller one in lower edge of area 1a, pale yellow. Hindwing dull reddish brown: a large spot in cell, white ringed brown-black: a series of variable discal spots in areas 6, 3, 2 and sometimes in area 1a, usually white ringed brown, sometimes minute and brown.

♀. Above. Forewing brown: base suffused yellow-brown: a large spot in end of cell, pale yellow: three irregular, often confluent, transverse subapical spots, sometimes produced along veins towards apex, pale yellow: a pair of large discal spots in areas 2 and 3, sometimes produced narrowly along veins towards termen, pale yellow: a variable discal spot in lower edge of area 1a, and sometimes an obscure small inner-discal spot in area 1a at half, pale yellow: cilia yellow-brown. Hindwing brown: a variable central area suffused yellow-brown: sometimes an obscure spot in cell, pale yellow: cilia yellow-brown.

Beneath as in male.

Loc. Sydney 10 11 12. Blue Mts. 11. Dimboola 11. Adelaide 11. Yallingup 11. Capel R. Waroona 11 12. Perth 11. Cunderdin 10. Carnarvon. 36♂ 29♀.

Examples from West Australia have the discal sexmark invariably broader and more clearly defined, but seem otherwise to be identical with those from N. S. Wales and Victoria.

286. **Motasingha atralba** Tepper.

The South Australian and West Australian races of this species show considerable differences. The former has much larger and more prominent markings above and beneath, and has the apical half of the termen of the forewing more convex. The sexmark of the male is shorter and narrow in *atralba*, while in *dactyliota* it is broader and reaches to the dorsum.

286a. **M. atralba atralba** Tepper. **Fig. 649.**

Transactions Royal Society South Australia 1881, p. 33, pl. 2, f. 5.

♂. Above. Forewing grey-brown: costa suffused grey: a large spot in cell, and three variable transverse subapical spots, whitish, hyaline: a pair of discal spots in areas 2 and 3, and a pair of smaller outer discal spots in areas 4 and 5, whitish, hyaline: cilia grey-brown, between veins white: an oblique narrow discal sexmark, from vein 1a to vein 3, black. Hindwing grey-brown: a very obscure irregular central streak in area 4-5, grey: cilia grey-brown, between veins white.

Beneath. Forewing grey-brown: apex grey: costa to end of cell, and basal half of cell, yellow-grey: hyaline spots as above. Hindwing grey: three rings, in cell, in base of area 7, and in area 1a before half, grey-brown: a discal series of rings, grey-brown.

♀. Above. Forewing grey-brown: costa suffused grey: a large spot in cell, and three transverse subapical spots, whitish, hyaline: a large discal spot in area 2, and a smaller one in area 3, whitish, hyaline: a discal spot in lower edge and a minute one in upper edge of area 1a, white: a pair of outer-discal spots in areas 4 and 5, whitish, hyaline: cilia grey-brown, between veins white. Hindwing as in male.

Beneath. Forewing grey-brown: apex grey: costa to end of cell, and basal half of cell, yellow-grey: spots as above. Hindwing as in male.

Loc. Ardrossan (type). Port Lincoln (*Meyrick*). Pt. Noarlunga 4. Moonta 11. 2♂ 4♀.

286b. **M. atralba dactyliota** Meyrick. **Fig. 648, 773.**

Proceedings Linnean Society N. S. Wales 1887, p. 831.

♂. Above. Forewing grey-brown: costa suffused grey: a spot in cell, and three variable transverse subapical dots, whitish, hyaline: a small discal spot in area 3, and a pair of smaller outer-discal spots in areas 4 and 5, whitish, hyaline: cilia grey-brown, between veins obscurely grey: an oblique, broad, inwardly irregular, discal sexmark, from dorsum to vein 3 (diminishing below vein 1a), black. Hindwing grey-brown: an obscure irregular streak in area 4-5, grey: cilia grey-brown between veins obscurely grey.

Beneath. Forewing grey-brown: apex grey: costa to end of cell, and basal half of cell, yellowish grey: hyaline spots and dots as above: a discal spot in area 2, and sometimes a variable small discal spot in area 1a, whitish. Hindwing grey: three obscure rings, in cell, in base of area 7, and in area 1a before half, grey-brown: a discal series of obscure rings, grey-brown.

♀. Above. Forewing grey-brown: costa suffused grey: a spot in cell, and three small transverse subapical spots, whitish, hyaline: a discal spot in lower edge and sometimes a minute one in upper edge of area 1a, white: a pair of small outer discal spots in areas 4 and 5, whitish, hyaline: cilia grey-brown, between veins whitish grey. Hindwing as in male.

Beneath. Forewing grey-brown: apex grey: costa to end of cell, and basal half of cell, yellowish grey: spots as above. Hindwing as in male.

Loc. Stirling Ranges 10. Waroona 10 11 12. Geraldton 10 11. 12♂ 6♀.

When describing this species Meyrick gave as localities Port Lincoln S.A. and Geraldton W.A., but as his description agrees with West Australian examples, we restrict the name *dactyliota* to the West Australian race of *atralba*.

287. **Motasingha monticola** Olliff. **Fig. 758, 759, 760.**

Proceedings Linnean Society N. S. Wales 1889, p. 624.

♂. Above. Forewing brown: base and costa suffused orange-brown: a small spot in end of cell and slightly produced along median, yellow: three transverse subapical dots, pale yellow: a small elongate discal spot in area 3, and sometimes a minute one in upper edge of area 2, pale yellow: cilia yellow, at veins brown: a discal sexmark, interrupted at each vein, from vein 1a to vein 3, grey-black margined black. Hindwing brown: base suffused orange-brown: a pair of small discal spots in areas 2 and 3, and rarely a central streak in area 4-5, pale yellow: cilia pale yellow, at veins brown.

Beneath. Forewing brown: cell, costa to beyond cell, and termen just below apex, dull yellow: cell spot as above and edged brown: subapical dots as above: a discal spot in area 3, a narrower one across area 2, and sometimes a still narrower one in area 1a, yellow. Hindwing orange-brown: dorsum pale yellow: a broad streak in cell, and a broad interrupted streak in area 4-5, whitish: a broad interrupted streak in area 1a, and another in area 7, whitish: a ring in cell, a dot in base of area 7, and a dot in area 1a before half, brown: a discal series of dots, brown, those in areas 2 and 3 larger and yellow: a pair of minute subterminal dots in areas 2 and 3, yellow.

♀. Above. Forewing brown: base and costa suffused orange-brown: a spot in end of cell, and three small confluent transverse subapical spots, yellow: a pair of elongate discal spots in areas 3 and 2, a smaller one in lower edge and sometimes a minute one in upper edge of area 1a, yellow: cilia yellow, at veins brown. Hindwing brown: base suffused orange-brown: a pair of discal spots in areas 2 and 3, and a central streak in area 4-5, yellow: cilia pale yellow, at veins brown. Beneath as in male.

Loc. Moonbar (type) 3. Mt. St. Bernard 1 2. Walhalla 2. 34♂ 27♀.

Mt Kosciusko (GAW), July 1920 -

288. **Motasingha dominula** Ploetz. **Fig. 764, 765, 766.**

Stettiner Entomologische Zeitung 1884, p. 379.

♂. Above. Forewing brown: sometimes a dot in end of cell, and sometimes three transverse subapical dots, whitish: cilia whitish, at veins broadly brown: an oblique and narrow discal sexmark from vein 1a to vein 3, dull black inwardly edged black. Hindwing brown: cilia dull yellow, at veins broadly brown.

Beneath. Forewing brown: costa, apex and termen suffused orange-brown: a large dot in cell and three transverse subapical dots, pale yellow: sometimes a row of obscure subterminal dots in apex, pale yellow. Hindwing red-brown: costa, apex and termen suffused orange-brown: an irregular series of subterminal and subcostal spots and dots, pale yellow: a spot in cell and a spot in area 1a before half, silvery white ringed brown: a series of irregular discal spots, silvery white ringed brown.

♀. Above. Forewing brown: a spot in end of cell and three transverse subapical dots, pale yellow: three small discal spots in areas 1a, 2 and 3, pale yellow: cilia dull yellow, at veins brown. Hindwing brown: cilia dull yellow, at veins brown.

Beneath. Forewing as in male: a row of obscure subterminal dots in apex, pale yellow. Hindwing red-brown: spots and dots as in male.

Cradle Mt Tas (RJT) Jan 1917

Loc. Ebor 1. Moonbar 1 3. Mt. Magnet 1. 46♂ 22♀.

A coloured copy of the unpublished figure by Ploetz places this species beyond doubt: *drachmophora* Meyrick must therefore sink as a synonym.

Genus **DISPAR** nov.

Antennae about half the length of costa: clubs short and stout, evenly bent at middle, and with tips pointed (**Fig. AJ 13**). Palpi with third joint moderate, blunt and porrect. Forewing with costa nearly straight and termen shorter than dorsum: vein 5 slightly nearer to vein 6 than to vein 4 in the male, but equidistant between vein 6 and vein 4 in the female: vein 2 nearer to vein 4 than to base of wing: male with a linear discal sexmark.

Type. *Dispar compacta* Butler.

This curious and abundant little species agrees so little with any of the genera of this subfamily, that we have found it necessary to erect a genus for it. The sexes are so dissimilar that they have been described as distinct species: Watson even placed them in separate genera. The tegumen is long, slender and pointed, and quite unlike that of any other species of the subfamily.

289. **Dispar compacta** Butler. **Fig. 705, 706, 707, 708.**

Annals Magazine Natural History 1882, p. 87.

♂. Above. Forewing brown: a spot in end of cell and produced along median, white, hyaline: three transverse subapical dots, and a small discal spot in area 3, white, hyaline: cilia grey-brown: a narrow discal sexmark from vein 1a to vein 3, dull black. Hindwing brown: a dot in cell and a band of four elongate discal spots, diminishing from vein 2 to vein 6, white, hyaline: cilia grey-brown.

Beneath. Forewing brown: costa, apex and termen, yellow-brown: spots and dots as above. Hindwing yellow-brown: a dot in cell (sometimes centred white), a dot in base of area 7, and a dot in area 1a at half, brown: a series of discal spots, those in areas 2, 3 and 4, large, almost confluent, white, hyaline, edged brown, and the remainder small obscure, brown.

♀. Above. Forewing brown: a spot in end of cell and three transverse subapical dots, pale yellow, hyaline: a discal spot in area 2 and a smaller one in base of area 3, pale yellow, hyaline: a discal dot in lower edge of area 1a, pale yellow: cilia yellow-brown, at veins brown. Hindwing brown: a broad central streak in area 4-5, yellow: cilia yellow-brown, at veins brown.

Beneath. Forewing brown: costa, apex and termen, orange-brown: a subterminal streak, lilacine grey: hyaline spots and dots as above and edged brown. Hindwing dark orange-brown suffused lilacine grey: a broad central band, pale lilacine grey: a dot in cell, a dot in base of area 7, and a dot in area 1a at half, lilacine grey edged brown: a series of discal dots, lilacine grey edged brown.

Loc. Brisbane 2. Toowoomba. Ebor 1. Manning R. 3. Sydney 1 2 3 4. Illawarra 1 2 3. Blue Mts. Colo Vale 1. Mt. St. Bernard 2. Sale 4. Wandin 2 3 4. Gisborne 2 3. Lorne 2 3. 44♂ 32♀. Toronto 4/17.

Genus **SIGNETA** nov.

Antennae about twothirds the length of costa: clubs abruptly bent before the middle, with the tips pointed. Palpi with third joint moderate, blunt and porrect. Forewing with costa nearly straight, and termen shorter than dorsum: vein 5 arising nearer to vein 4 than to vein 6, but except close to its base about equidistant between them: vein 1a in male evenly bowed towards dorsum before middle: male with an ovoid sexmark between vein 1a at half and cell. (**Fig. AN**).

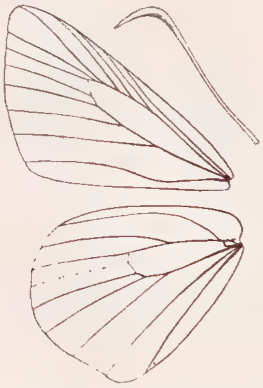

Fig. AN. Wing venation and antenna of *Signeta flammeata* (enlarged).

Type. *Signeta flammeata* Butler.

The two species of this genus are easily recognised by the peculiar distortion of vein 1a of forewing, which appears to have some relation to the curious sexmark, though the distortion occurs nearer the base of the wing than does the sexmark: vein 1a is only slightly bowed in the female.

Mabille wrongly places *S. flammeata* in his genus *Oxytoxia* as a synonym of *T. doubledayi,* in spite of his having described the genus *Oxytoxia* as having a straight discal sexmark.

290. **Signeta flammeata** Butler. **Fig. 652, 653, 654.**

Annals Magazine Natural History 1882, p. 85.

♂. Above. Forewing brown suffused orange-brown: a spot in cell, yellow, hyaline: usually a subapical dot in area 6, sometimes another in area 7, and only rarely the three transverse subapical dots, yellow, hyaline: a discal spot in area 3, yellow, hyaline: cilia orange-brown, at veins brown: a large ovoid discal sexmark below lower apex of cell, black. Hindwing brown: a central area suffused orange-brown: cilia orange-brown.

Beneath. Forewing brown: costa, apex and termen, orange-brown: hyaline spots and dots as above. Hindwing orange-brown: a dot in cell, and a dot in area 1a before half, brown: a series of discal dots, brown.

♀. Above. Forewing dark brown: a large spot in cell, and three transverse subapical dots, yellow, hyaline: a large elongate discal spot in area 2, and a smaller one in area 3, yellow, hyaline: cilia orange-brown, at veins brown. Hindwing dark brown: central area suffused orange-brown: a broad central streak in area 4-5, yellow: cilia orange-brown.

Beneath. Forewing brown: costa, apex and termen, pale red-brown: spots and dots as above. Hindwing pale red-brown: a dot in cell and a dot in area 1a before half, brown: a series of discal dots, brown.

Loc. Killarney. Dorrigo 1. Sydney 4. Illawarra 2 3. Blue Mts. 1 4 12. Colo Vale 1 2. Mt. St. Bernard 1 2. Poowong 1. Wandin 1 2 12. Healesville 2. Gisborne 1 3 11. Lorne 2 3. 37♂ 27♀.

291. **Signeta tymbophora** Meyrick & Lower. **Fig. 662, 663, 664.**

Transactions Royal Society South Australia 1902, p. 70.

♂. Above. Forewing brown-black suffused orange-brown: a subapical dot in area 6, and sometimes another in area 7, white, hyaline: cilia orange-brown, at veins brown: a large ovoid discal sexmark below lower apex of cell, black. Hindwing brown-black faintly suffused orange-brown: cilia pale orange-brown.

Beneath. Forewing dark brown: costa, apex and termen, orange-brown: hyaline dot or dots as above: a discal dot in area 3, and sometimes an obscure dot in cell, whitish. Hindwing dull orange-brown: traces of a small ring in cell, and a series of obscure discal rings, brown.

♀. Above. Forewing brown-black: a spot in end of cell and three minute transverse subapical dots, pale yellow, hyaline: a discal spot in area 2 and a smaller one in area 3, pale yellow, hyaline: cilia orange-brown, at veins brown. Hindwing as in male.

Beneath. Forewing dark brown: costa, apex and termen, orange-brown: hyaline spots and dots as above. Hindwing as in male.

Loc. Illawarra 2 3. 25♂ 21♀.

This rare species is extremely local in its habits, and so far as yet known is confined to the Illawarra district. Once only we found it fairly abundant in a small cleared patch in the scrub, settled on the flowers of a climbing vine.

Subfamily **ERYNNINAE.**

Ovum. Dome shaped: large: usually smooth.

Larva. Cylindrical: elongate: head very hard and prominent: usually pale greenish, and with the outer skin very transparent. Feeds by night upon palms and various robust grasses, and shelters by day within a fold of a leaf of the foodplant.

Pupa. Cylindrical: smooth: operculum without projections: shelters within a fold of a leaf of the foodplant.

Imago. Of robust build and, with but few exceptions, of small or moderate size. When in a state of complete repose, the butterflies rest with their wings erect and the upper surfaces pressed closely together: when sunning themselves they partly open the forewings and depress the hindwings. Forewing with apex usually acute, especially in the male: cell less than twothirds the length of costa: vein 5 invariably bent downwards at its point of origin, and so arising nearer to vein 4 than to vein 6: vein 2 variable in its position between vein 4 and base of wing. Hindwing with vein 5 absent: termen between vein 1a and vein 2 sometimes concave. Males with or without a discal sexmark on forewing above. Hind tibiae not fringed.

The Australian species of this subfamily are Malayan in origin and character, and have all spread downward from the north: only a few species have reached the south, where their place is taken by the *Trapezitinae.*

If we except *Notocrypta*, all the species may be distinguished by their general resemblance to butterflies of the wide ranging genera *Telicota* and *Parnara.* They are naturally divided into four easily recognised groups: *Taractrocera* contains species very similar to *Padraona* but at once separated by their spatulate antennae: *Padraona* resembles diminutive *Telicota,* but forms a compact group distinguished by the very peculiar palpi: *Telicota* and *Cephrenes* contain all the larger brown and orange species, and the species of the genus *Parnara* are known by their hyaline spots and sombre greenish brown colour.

Key to the Genera of *ERYNNINAE.*

A. Clubs of antennae spatulate (**Fig. AO 1**) .... *Taractrocera.*
B. Clubs of antennae not spatulate.
 a. Third joint of palpi long and slender (**Fig. APa**) .... *Padraona.*
 b. Third joint of palpi short and stout (**Fig. APb**).
  a^1. Vein 2 of forewing not nearer to base of wing than to vein 4.
   a^2. Antennae less than twothirds the length of costa.
    a^3. Vein 3 of forewing equidistant between vein 4 and vein 2 in male, but nearer to vein 4 than to vein 2 in female (**Fig. AQ**) .... *Telicota.*
    b^3. Vein 3 of forewing nearer to vein 4 than to vein 2 in both sexes.
     a^4. Vein 2 of forewing about equidistant between vein 4 and base of wing .. *Cephrenes.*
     b^4. Vein 2 of forewing nearer to vein 4 than to base of wing .... *Parnara.*
   b^2. Antennae more than twothirds the length of costa .... *Sabera.*
  b^1. Vein 2 of forewing nearer to base of wing than to vein 4 .... *Notocrypta.*

Genus **TARACTROCERA** Butler.

Catalogue Fabrician Diurnal Lepidoptera, p. 279, 1869.

Antennae more than half the length of costa: club spatulate with apiculus absent or very short (**Fig. AO 1**). Palpi with third joint slender and erect. Forewing with vein 5 nearer to vein 4 than to vein 6: vein 3 nearer to vein 4 than to vein 2: vein 2 nearer to vein 4 than to base of wing: male with or without a discal sexmark. Hindwing with termen evenly rounded.

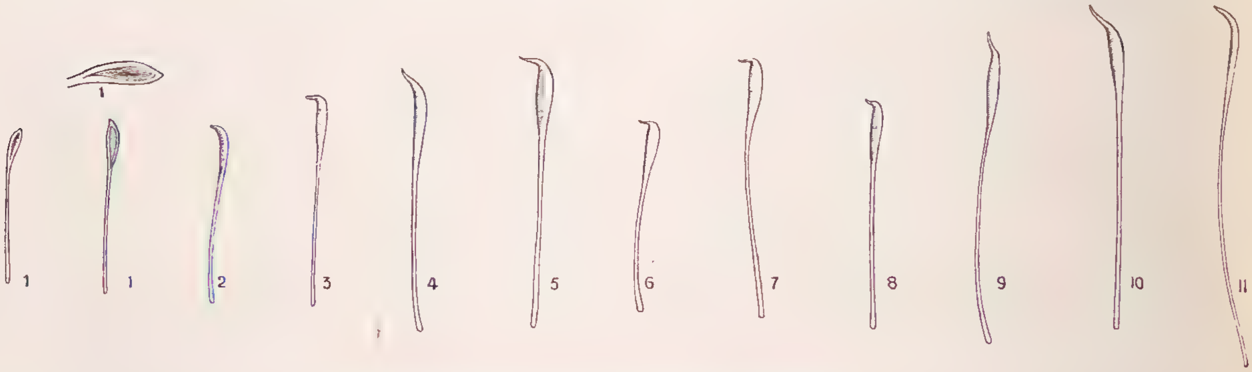

Fig. AO. Antennae of *Erynninae* (enlarged).

1. *Taratrocera papyria.* 2. *Padraona flavovittata.* 3. *Padraona hypomeloma.* 4. *Padraona marnas.* 5. *Cephrenes sperthias.* 6. *Cephrenes amalia.* 7. *Parnara laraca.* 8. *Parnara mathias.* 9. *Sabera caesina.* 10. *Sabera fuliginosa.* 11. *Notocrypta leucogaster.*

TYPE. *Taractrocera maevius* Fabricius, from Ceylon.

FOODPLANT. *Imperata. Cynodon* (Couch grass).

All the species may be at once distinguished by the spatulate clubs of the antennae. We include within this genus *Bibla* (type *B. papyria*), erected by Mabille for those species of *Taractrocera* with a discal sexmark on forewing.

292. **Taractrocera papyria** Boisduval.

292a. **T. papyria papyria** Boisduval. **Fig. 580, 581.**

Voyage Astrolabe, Lepidoptera, p. 166, 1832.

♂. ABOVE. Forewing dull brown: base and dorsum lightly dusted dull orange: a spot in end of cell and produced along median, dull orange: three small obscure transverse subapical spots, dull orange: an irregular narrow discal band of confluent spots, from vein 1a to vein 6, dull orange, with last two smaller than the others and moved nearer termen: cilia brown with tips whitish: a very narrow discal sexmark from vein 1a to beyond vein 4, black. Hindwing dull brown: a dot in cell and a dot in base of area 6, dull orange: a narrow straight discal band of confluent spots, dull orange: cilia brown with tips white.

BENEATH. Forewing brown: costa and apex suffused pale orange-brown: cell spot and subapical spots as above, but latter often whitish: discal band of spots paler than above, not confluent, and with last two quite free from the remainder and often white: termen with a white line. Hindwing dull pale orange-brown: a spot in cell, sometimes a dot in base of area 6, and a narrow discal band of confluent spots, white: termen with a whitish line.

♀. ABOVE. Forewing as in male: base and dorsum not dusted orange: spots smaller and discal band narrower: sexmark absent. Hindwing as in male: cell spot smaller and discal band narrower.

BENEATH as in male: spots smaller and bands narrower.

LOC. Kuranda 3 4 5. Brisbane 10. Pallal 12. Ebor 1. Port Macquarie 10. Manning R. 3. Sydney 1 2 3 4 9 10 11 12. Illawarra 2 3 4. Blue Mts. 4. Wandin 2 3 11. Melbourne 2 3 10. Gisborne 2 3 11. Castlemaine 2 10. Strahan 1 12. 49♂ 35♀. Port Macquarie 4.1917.

At once distinguished by the white bands of the undersurface: freshly emerged specimens are often tinged greenish beneath.

Wandin 27.10.15 (AWB) Richmond R. 2.10.11. (GAW 1922) Adelaide 31.3.13 (FERA)

[illegible]

[illegible] cilia brown [illegible]

[illegible] yellow-brown [illegible] spots [illegible]

[illegible] forming [illegible]

Richmond R. 11. GAW. 1922

292b. **T. papyria agraulia** Hewitson. **Fig. 585, 586.**

Descriptions 100 new Hesperidae, p. 45, 1868.

♂. Above. Forewing brown: a cell patch, extending to base and costa and almost to dorsum, orange: three small transverse subapical spots, orange: an irregular discal band of confluent spots from vein 1a to vein 6, orange, with last two smaller and placed nearer termen: cilia brown with tips paler: a very narrow discal sexmark from vein 1a to beyond vein 4, black. Hindwing brown: a dot in cell and extended as a streak to base, and a dot in base of area 6, orange: a narrow straight discal band of confluent spots, orange: cilia orange.

Beneath. Forewing brown suffused orange-brown: cell and costa to end of cell, orange: subapical spots as above, but smaller: discal band as above, but narrower. Hindwing orange-brown: spots and bands as above, but obscured.

♀. Above. Forewing brown: a spot in end of cell and produced along median, orange: subapical spots as in male, but smaller: discal band as in male, but narrower and more clearly defined. Hindwing as in male: cell spot smaller and discal band narrower.

Beneath. Forewing as in male. Hindwing as in male, but duller orange.

Loc. Yallingup 9 10. Stirling Range 10. Warren R. Margaret R. 11. Waroona 1 2 3 4 10 11 12. Perth 1. 33♂ 17♀.

This is the western race of *T. papyria.* Meyrick & Lower list it wrongly as *T. flavovittata,* but that specific name belongs to the most abundant eastern species of the genus *Padraona.*

293. **Taractrocera dolon** Ploetz. **Fig. 876, 877.**

Stettiner Entomologische Zeitung 1884, p. 165.

♂. Above. Forewing dull brown: outer half of cell and costa to end of cell, pale orange: three transverse subapical spots, pale orange: an irregular discal band of distinct spots, from vein 1a to vein 6, pale orange: a faint streak along dorsum, pale orange: cilia brown with tips paler and at tornus whitish: a series of small discal patches of sexscales upon veins 1a, 2 and 3, black. Hindwing dull brown: a dot in cell and sometimes a variable dot in base of area 6, pale orange: a discal band of spots, pale orange: cilia whitish.

Beneath. Forewing dull brown: apex suffused dull orange: cell spot and subapical spots as above but latter smaller: discal band as above. Hindwing dull orange: spots and band as above but paler.

♀. Above. Forewing as in male: spots slightly smaller: sexmark absent. Hindwing as in male: dots and spots slightly smaller.

Beneath as in male: spots and dots slightly smaller.

Loc. Kuranda 1 2 3 9 10. Atherton 2. Mackay 2 11. Stradbroke Is. 1 9. Darwin 9. 8♂ 6♀.

The discal bands of distinct instead of confluent spots readily distinguish this species from the others of the genus.

294. **Taractrocera anisomorpha** Lower. **Fig. 883, 884.**

Transactions Royal Society South Australia 1911, p. 146.

♂. Above. Forewing brown: cell and costa to beyond end of cell, yellowish orange: three confluent transverse subapical spots, touching cell spot and discal band, yellowish orange: a broad irregular discal band of confluent spots, from vein 1a to vein 6, yellowish orange: a streak along dorsum and a faint streak in base of area 1a, yellowish orange: cilia brown with tips paler and at tornus orange: a narrow irregular discal sexmark from vein 1a to beyond vein 4, black. Hindwing brown: a spot in cell and sometimes extended as a streak to base, yellowish orange: a broad discal band of confluent spots, yellowish orange: often a streak along vein 1a, yellowish orange: cilia yellowish orange.

Beneath. Forewing brown: apex and termen suffused yellow-brown: spots and band as above. Hindwing yellow-brown: spots as above, but much smaller: streak along vein 1a broader.

♀. Above. Forewing as in male: spots slightly smaller and discal band narrower: sexmark absent. Hindwing as in male: discal band narrower and streak along vein 1a broader.

Beneath. Forewing as in male. Hindwing as in male: spots more obscure.

Loc. Thursday Is. 12. Prince of Wales Is. 5 6. Banks Is. 2. Cairns 2. Chillagoe 3. Fortescue R. Darwin 3 9 10. Tennants Creek. 5♂ 6♀.

This species has a much narrower forewing than the others of the genus, and its average size is larger.

Genus **PADRAONA** Moore.

Lepidoptera of Ceylon, i, p. 170, 1881.

Antennae about twothirds the length of costa: club moderate and distinct with apiculus distinct and pointed (**Fig. AO** 2, 3, 4). Palpi with third joint long, slender and erect or suberect (**Fig. APa**). Forewing with vein 5 nearer to vein 4 than to vein 6: vein 3 much nearer to vein 4 than to vein 2: vein 2 slightly nearer to vein 4 than to base of wing: male with or without a discal sexmark. Hindwing with termen sometimes slightly concave between vein 1a and vein 2.

TYPE. *Padraona dara* Kollar, from northern India.

FOODPLANT. *Imperata. Cynodon.*

The long slender palpi distinguish this from all other Australian genera except *Taractrocera* an from that genus it is separated by the widely different antennae. Affinity with *Taractrocera* is indicated by *lascivia* and with *Cephrenes* and *Telicota* by *marnas* and *affinis*.

As defined by us *Padraona* includes the genus *Ocybadistes* Heron, which differs from typical *Padraona* in having a straight discal sexmark and a broader forewing: *Ocybadistes* would have included *flavovittata, sunias, marnas* and *affinis*. Elwes and Edwards merge *Padraona* in the genus *Telicota,* overlooking its widely divergent palpi, and the different venation of the male.

We cannot recognise *P. suborbicularis* Mabille (Genera Insectorum 1904, p. 141) described from a single defective example from Australia; nor *Ocybadistes suffusus* Mabille described on page 142 of same work: both are probably synonyms of well known Australian species.

295. **Padraona lascivia** Rosenstock. **Fig. 587, 588.**

Annals Magazine Natural History 1885, p. 378, pl. 11, f. 1.

♂. ABOVE. Forewing dark brown: cell and costa to beyond cell suffused dull orange: usually a small obscure subapical spot in area 6, sometimes another in area 7, rarely a third in area 8, orange: a narrow straight discal band of distinct spots from vein 1a to vein 6, orange: a faint streak along dorsum, dull orange: cilia dark brown with tips paler: two small discal patches of sexscales on vein 1a and vein 2, black. Hindwing dark brown: sometimes a dot in base of area 6, dull orange: a narrow straight discal band of spots, dull orange: cilia dark brown with tips paler, and at tornus broadly dull orange.

BENEATH. Forewing dark brown: costa, cell and apex suffused dull orange-brown: spots and discal band as above. Hindwing dull orange-brown: a streak along vein 1a, brown: cell dot and discal band as above but obscure.

♀. ABOVE. Forewing as in male: discal band broader: sexscales absent.

BENEATH as in male: discal band broader.

LOC. Cape York 2 11. Claudie R. 2 3. Cooktown (*Mabille*). Cairns 7. Kuranda 4 8. Herberton 1. Ingham 4 8. Mackay 9 10 11 12. Brisbane. Richmond R. 9 10. Ourimbah 4. Sydney 1 2 3 4 10 11 12. Illawarra 3 4. Oakleigh 12. Fernshaw (*Kershaw*). Tasmania (*Lower*). 47♂ 44♀.

Examples from northern Queensland have the orange spots and bands much reduced in size: to these the name *neocles* Mabille will possibly apply.

296. **Padraona heterobathra** Lower. **Fig. 872.**

Transactions Royal Society South Australia 1908, p. 316.

♂. ABOVE. Forewing black: cell and costa to end of cell, bright orange: three confluent transverse subapical spots, free from cell spot but sometimes touching discal band, bright orange: an irregular discal band of confluent spots from vein 1a to vein 6, bright orange with fourth and fifth minute: a faint streak along dorsum, orange: cilia black with tips orange. Hindwing black: a dot in cell and an irregular broad discal band of confluent spots, bright orange: a streak along vein 1a, not reaching termen, bright orange: cilia bright orange. Antennae black.

BENEATH. Forewing black: costa and apex suffused orange: a large spot in end of cell, bright orange: subapical spots and discal band as above: termen with a dark line. Hindwing orange: a streak along vein 1a, brown: cell spot and discal band as above but irregularly edged black: termen with a dark line. Antennae black broadly annulated orange, and clubs orange with tips black.

Port Macquarie 3/1910

[illegible]

[illegible] Tab. 597. 598.

[illegible]

[illegible] [illegible] Hist., [illegible]

[illegible]

[illegible] [illegible] vein [illegible] [illegible] [illegible] [illegible] band

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Maclay [illegible]

[illegible] [illegible] *[illegible]*. The [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible]

[illegible] brownblack; [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] brown [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Port Macquarie 3/4/15 Toronto 4/17. Urunga (W) Oct [illegible]

♀. Above. Forewing as in male: a short streak along subcostal vein in base, brown: dorsal streak fainter. Hindwing as in male. Antennae black.

Beneath as in male. Antennae black annulated pale yellow, and with clubs black.

Loc. Cape York 2 3 4 5 10. Prince of Wales Is. 6. Banks Is. 2 3. Darnley Is. 4 5 6 11 12. Cooktown 11. Cairns 6 8 10. Kuranda 1 3 4 5 7. Ingham 4 5. Townsville 6. Gympie (*Dr. Turner*) 4. 41♂ 16♀.

One of our smallest and neatest species. In the absence of a sexmark the colour of the clubs of the antennae beneath forms a reliable guide to the sex.

297. **Padraona flavovittata** Latreille.

This name has been wrongly applied to *Taractrocera agraulia* from West Australia. The original description applies best to this the most abundant species of *Padraona*, and we are confirmed in this view by Latreille: he placed it in the section of the *Hesperidae* with a short terminal hook to the antennae, which shows that it did not belong to the genus *Taractrocera*.

297a. **P. flavovittata walkeri** Heron. **Fig. 858, 865.**

Annals Magazine Natural History 1894, p. 106.

♂. Above. Forewing brown-black: cell and costa to beyond end of cell, and sometimes base from costa to dorsum, orange: three confluent transverse subapical spots, touching cell patch, orange: a discal band of confluent spots from vein 1a to vein 6, orange: a faint streak along dorsum, and a faint streak in base of area 1a, orange: cilia brown-black with tips paler and at tornus pale orange: a discal sexmark from vein 1a to beyond vein 4, dull black. Hindwing brown-black: a spot in cell and usually a dot in base of area 6, orange: an irregular discal band of confluent spots, orange: a faint streak along vein 1a, orange: cilia orange with tips paler.

Beneath. Forewing brown-black: apex suffused orange: spots and discal band as above: termen with a brown line. Hindwing orange: sometimes a faint streak along vein 1a, brown-black: spots as above: discal band as above, but irregularly edged brown-black: termen with a brown line.

♀. Above. Forewing as in male: subcostal vein in base obscurely brown-black: spots of discal band narrower, last two smaller and placed slightly nearer termen: sexmark absent. Hindwing as in male: discal band narrower.

Beneath as in male: discal bands narrower.

Loc. Claudie R. 1 2 3. Cooktown 10. Cairns 6 7 11. Kuranda 3 4 5 6 7 12. Ingham 5. Mackay 2 3 4 5 9 11 12. Rockhampton 9. Darwin (type) 4 5 9. Melville Is. 18♂ 12♀.

All the specimens we have examined are of distinctly smaller average size than *flavovittata*. The Mackay and Rockhampton examples are not quite typical yet seem distinct from *flavovittata*.

297b. **P. flavovittata flavovittata** Latreille. **Fig. 859, 866.**

Encyclopedie Methodique, IX, p. 768, 1819.

♂. Above. Forewing brown-black: cell and costa to beyond end of cell, and sometimes base from costa to dorsum, orange: three confluent transverse subapical spots, sometimes touching cell patch, orange: a discal band of confluent spots from vein 1a to vein 6, orange, last two placed slightly nearer termen: a faint streak along dorsum and a faint streak in base of area 1a, orange: cilia brown-black with tips paler and at tornus pale orange: a broad discal sexmark from vein 1a to beyond vein 4, dull black. Hindwing brown-black: a spot in cell and usually a dot in base of area 6, orange: an irregular discal band of confluent spots, orange: sometimes a faint streak along vein 1a, orange: cilia orange with tips paler.

Beneath. Forewing brown-black: apex suffused dull orange: spots and discal band as above: termen with a brown line. Hindwing dull orange: sometimes a broad streak along vein 1a, brown-black: spots and band as above but sometimes obscure: termen with a brown line.

♀. Above. Forewing as in male: subcostal vein in base obscurely brown-black: spots of discal band more distinct and last two smaller: sexmark absent. Hindwing as in male: discal band narrower.

Beneath as in male.

9.10.11.

Loc. Brisbane 2 4 8 10 11. Richmond R. 1.^ Bellingen 11. Dorrigo 11. Port Macquarie 10. Manning R. 3. Pallal 11. Sydney 1 2 3 4 7 8 9 10 11 12. Illawarra 2 3 4. Blue Mts. 1. Moruya 4 11. Pambula 12. Launceston 12. Hobart 2. 82♂ 56♀.

Freshly emerged specimens usually have the apex of forewing and the whole of hindwing beneath, suffused greenish.

297c. **P. flavovittata hypochlora** Lower. **Fig. 860, 867.**

Transactions Royal Society South Australia 1911, p. 149.

♂. Above. Forewing brown-black: apex suffused pale orange: cell and costa to beyond end of cell, and usually base from costa to dorsum, pale orange: three confluent transverse subapical spots, touching cell patch and sometimes touching discal band, pale orange: a discal band of confluent spots from vein 1a to vein 6, pale orange: a streak along dorsum, and a streak in base of area 1a, pale orange: cilia brown-black with tips paler and at tornus paler orange: a broad discal sexmark from vein 1a to beyond vein 4, dull black. Hindwing brown-black: a spot in cell, and sometimes a dot in base of area 6, pale orange: an irregular discal band of confluent spots, pale orange: a faint streak along vein 1a, pale orange: cilia pale orange with tips whitish.

Beneath. Forewing brown-black: apex suffused dull yellow: spots and discal band as above. Hindwing dull yellow: spots as above but obscured: discal band as above but very much obscured.

♀. Above. Forewing as in male: subcostal vein in base obscurely brown-black: discal band with last two spots smaller and placed slightly nearer termen: sexmark absent. Hindwing as in male.

Beneath. Forewing as in male: cell spot larger: discal band as above. Hindwing as in male.

Loc. Adelaide 1 2 3 11 12. 20♂ 8♀.

Distinguished from *flavovittata* by the somewhat larger size, the greater area of orange on forewing above, and the almost total absence of markings on hindwing beneath.

298. **Padraona hypomeloma** Lower. **Fig. 584, 873, 874.**

Transactions Royal Society South Australia 1911, p. 152.

♂. Above. Forewing dark brown: cell and costa to beyond end of cell, pale orange: three confluent transverse subapical spots, sometimes touching cell patch, and sometimes touching discal band, pale orange: a broad discal band of confluent spots from vein 1a to vein 6, pale orange: a faint streak along dorsum and a very faint streak in base of area 1a, pale orange: cilia dark brown with tips paler and at tornus pale orange: a narrow irregular discal sexmark along inner edge of discal band, from vein 1a to vein 5, black. Hindwing dark brown: a spot in cell and a spot in base of area 6, pale orange: an irregular band of confluent discal spots, pale orange: a faint streak along vein 1a and reaching termen, pale orange: cilia pale orange with tips whitish.

Beneath. Forewing dark brown: apex suffused orange-brown: spots and discal band as above: termen with a dark line. Hindwing orange-brown: a streak along dorsum, white: a broad streak along vein 1a dark brown: spots as above: discal band often broken up into distinct irregular spots: termen with a dark line.

♀. Above. Forewing dark brown: a large spot in end of cell and produced along median, and costa to beyond end of cell, pale orange: subapical spots as in male, but free from cell patch and discal band: discal band narrower than in male: a very faint streak along dorsum, pale orange. Hindwing as in male: discal band narrower: streak along vein 1a not reaching termen.

Beneath. Forewing dark brown: apex suffused dull orange-brown: spots and discal band narrower than above: termen with a dark line. Hindwing as in male: spots of discal band often much smaller.

Loc. Prince of Wales Is. 5 6. Kuranda 3 4 6. Rockhampton 9. Brisbane 9. Sydney 2 3 4 10 11. 17♂ 12♀.

The examples from Prince of Wales Is. are a much brighter orange than those from Sydney.

299. **Padraona sunias** Felder. **Fig. 582, 583, 875, 882.**

Sitzungsberichte Akademie Wissenschaften Wien 1860, p. 462.

♂. Above. Forewing brown-black: cell and costa to beyond end of cell, and often base from costa to dorsum, bright orange: three confluent transverse subapical spots, usually touching cell spot and usually touching discal band, bright orange: a broad discal band of confluent spots from vein 1a to vein 6, bright orange: a streak along dorsum and a streak in base of area 1a, bright orange: cilia brown-black with tips paler and at tornus orange: a broad irregular discal sexmark from vein 1a to vein 5, dull black. Hindwing brown-black: a spot in cell and an irregular spot in base of area 6, bright orange: a broad irregular discal band of confluent spots, bright orange: a streak along vein 1a rarely reaching termen, bright orange: cilia bright orange.

Beneath. Forewing brown-black: apex suffused orange: spots and discal band as above: termen with a dark line. Hindwing orange: sometimes a broad obscure streak along dorsum, brown-black: spots as above, often obscure, and usually an extra spot in base of area 7: discal band as above, but irregularly and obscurely edged brown-black: termen with a dark line.

♀. Above. Forewing as in male: subcostal vein in base obscurely brown-black: subapical spots free from cell patch and discal band: discal band narrower: sexmark absent. Hindwing as in male: discal band narrower.

Beneath as in male: discal bands narrower.

Loc. Cape York 4 9 11 12. Prince of Wales Is. 4 5 6. Banks Is. 2 3. Darnley Is. 4 5 6 12. Murray Is. 8 9. Claudie R. 1. Cooktown 9 10. Cairns 6 7 10 11 12. Kuranda 3 4 5 6. Ingham 4 5 8 9. Townsville 4. Mackay 1 4 10 11. Rockhampton 2. Brisbane 1 2 12. Richmond R. 1.10. Port Macquarie 10. Manning R. 3. Darwin 9. 61♂ 35♀. Port Macquarie 3-11/1918.

It is only after long consideration that we have decided to apply this name to an Australian species. Felder's type came from Amboina, and has apparently been lost.

A form of this species appears in Lower's Revision of the Australian *Hesperidae* (Transactions Royal Society South Australia 1911, p. 150) as *Ocybadistes rectivitta* Mabille. This has the subapical spots of forewing usually free from the cell patch and the discal band: the discal band of forewing is narrower, and the spots forming it are more distinct. It is not a geographical race, for we have it from several localities where typical *sunias* also occurs. Extremes of either form are easily separated, but we have intergrades that cannot be satisfactorily allotted to either. To make quite certain we have examined the genitalia of a series of both forms and we find they are identical. Hence *O. rectivitta*, as defined by Lower, must sink as a synonym of *sunias*. Fruhstorfer (Iris 1910, p. 97) states that *rectivitta* belongs to the genus *Taractrocera*, and that although described from Celebes, Mabille's specimens are labelled as from Australia. Mabille himself, in the Genera Insectorum, places *rectivitta* in the genus *Padraona*, with Celebes as the only locality.

300. **Padraona marnas** Felder. **Fig. 704. 886.**

Sitzungsberichte Akademie Wissenschaften Wien 1860. p. 462.

♂. Above. Forewing brown-black: costa dusted orange: an elongate spot in outer half of cell, and a streak along median vein, bright orange: three small transverse subapical spots, bright orange: a discal band of spots from vein 1a to vein 4, with a dot (placed nearer termen) in area 4 and sometimes another in area 5, bright orange: a faint streak along dorsum and a faint streak in area 1a, orange: cilia brown-black with tips paler and at tornus orange: a discal sexmark from vein 1a to vein 4, dull black. Hindwing brown-black: a broad discal band of confluent spots, bright orange: a streak along vein 1a to termen, bright orange: cilia orange.

Beneath. Forewing brown-black: apex orange-brown: a broad spot in end of cell and costa to beyond end of cell, orange: subapical spots and discal band as above but pale orange. Hindwing orange-brown: an obscure tornal patch, brown: an obscure dot in cell, orange: discal band as above, but pale orange and irregularly edged brown: termen with a brown line.

♀. Above. Forewing as in male: spot of discal band of area 2 distinctly larger: sexmark absent. Hindwing as in male.

Beneath. Forewing as in male: spot of area 2 larger. Hindwing as in male.

Loc. Cape York 2 3 4 5 7 8 9 10 11. Claudie R. 12. Cooktown 10. Cairns 1 6 7 8 10 11. Kuranda 1 2 3 4 5 6 7 8 10 11. Atherton 11. Ingham 4 5 8 9. Mackay 2 3 4 5 8 9 10 11. 44♂ 34♀.

The type of this species came from Amboina. Both *marnas* and *affinis* differ from the others of the genus in their larger size. Their broader wings, slender palpi and different male venation separate them decisively from the species of similar facies in *Telicota*: the tegumen of both species is of the *Padraona* and not of the *Telicota* pattern.

301. **Padraona affinis** Waterhouse & Lyell. **Fig. 885.**

Victorian Naturalist 1912. Vol. XXVIII, p. 227.

♂. Above. Forewing brown-black: costa dusted orange: an elongate spot in outer half of cell and a streak along median vein, bright orange: three elongate confluent transverse subapical spots, bright orange: a discal band of spots from vein 1a to vein 6, those in areas 4 and 5 only half the width of the lower ones, bright orange: a faint streak along dorsum and a faint streak in area 1a, orange: cilia brown-black with tips paler and at tornus orange: a discal sexmark from vein 1a to vein 4, dull black. Hindwing brown-black: a broad straight discal band of confluent spots, bright orange: cilia orange.

Beneath. Forewing brown-black: a broad spot in end of cell and costa to beyond end of cell, orange: subapical spots and discal band as above, but pale orange. Hindwing dull brown: costa suffused pale orange: an obscure tornal patch, brown: a dot in cell, pale orange: discal band as above but pale orange and irregularly edged brown: termen with a brown line.

♀. Above. Forewing as in male: spot of discal band in area 2, distinctly larger: sexmark absent. Hindwing as in male.

Beneath. Forewing as in male: spot of area 2 larger. Hindwing as in male.

Loc. Cairns 6 7 8. Kuranda 2 3 4 5 6. Ingham 8 9. Mackay. 14♂ 9♀.

This species resembles *marnas* closely, but is of smaller average size. The tegumen of *marnas* is much narrower than that of *affinis*, although *affinis* is the smaller butterfly. The absence of the orange streak along vein 1a of the hindwing, and the much larger and confluent subapical spots of the forewing are minor characters that distinguish *affinis* from *marnas*.

Genus **CEPHRENES** nov.

Antennae more than half the length of costa: clubs moderate and distinct with apiculus distinct and pointed (**Fig. AO 5, 6**). Palpi with third joint very short, stout and suberect. Forewing with vein 5 nearer to vein 4 than to vein 6: vein 3 much nearer to vein 4 than to vein 2: vein 2 about equidistant between vein 4 and base of wing: male without a discal sexmark (except in *aruana*). Hindwing with termen slightly concave between vein 1a and vein 2.

Type. *Cephrenes sperthias* Felder.

Foodplant. Palms. *Kentia*. *Livistona*.

We have renamed this genus because *Corone*, as proposed by Mabille, is preoccupied. The type indicated by Mabille was his own species *ismenoides*, which is identical with the female of *sperthias* Felder.

Cephrenes is allied to *Telicota* but the butterflies are of larger average size. *Telicota* has a sexmark on the forewing, a distinct male venation, and a different type of tegumen.

302. **Cephrenes augiades** Felder. (Amboina),

302a. **C. augiades sperthias** Felder. **Fig. 678, 679, 680, 681, 682.**

Verhandlungen Zoologisch-botanischen Gesellschaft Wien 1862, p. 492.

♂. Above. Forewing rich brown-black: cell, except lower apex, bright orange: costa to beyond end of cell, and sometimes just reaching subapical spots, bright orange: three elongate transverse subapical spots, sometimes extending narrowly along veins towards or to apex, bright orange: a broad discal band of spots from vein 1a to vein 4, bright orange, with usually an extra minute spot placed nearer termen in area 4, and sometimes a second one also placed nearer termen in area 5, bright orange: a faint streak along dorsum and a faint streak in base of area 1a, orange: cilia brown-black with tips faintly orange. Hindwing rich brown-black: a faint spot in cell and a discal band of spots, bright orange: cilia orange.

Beneath. Forewing brown-black: costa narrowly and apex broadly, red-brown: cell spot as above, but not extended to base, yellow or yellow-brown: three faint elongate transverse subapical spots, yellow-brown: a discal series of three large spots from vein 1a to vein 4, yellow, that in area 1a paler. Hindwing red-brown: a large tornal spot, and a streak along area 1a, brown-black: cell spot and discal band as above, but orange-brown with the spot of band nearest dorsum paler.

♀. Above. Forewing rich brown-black: base faintly dusted dull orange: sometimes a faint spot in end of cell, and sometimes three faint transverse subapical spots, dull orange: sometimes a very narrow discal band of faint spots from vein 1a to vein 4, dull orange: cilia brown-black. Hindwing rich brown-black: sometimes a narrow discal band of faint spots, dull orange: cilia brown-black, at tornus dull orange.

Beneath. Forewing brown-black: costa narrowly and apex broadly, red-brown: a spot in end of cell, and a discal series of three large spots from vein 1a to vein 4, yellow: three elongate transverse subapical spots, yellow-brown. Hindwing red-brown: a large tornal spot, and a streak along area 1a, brown-black: traces of a narrow discal band of spots, yellowish.

Loc. Cape York 2 5 8 9. Thursday Is. 2 5. Prince of Wales Is. 5. Banks Is. 2 3. Cairns 6. Kuranda 2 3 5 6 7. Ingham 9. Mackay 2 3 4 5 8 11. Brisbane 5 10. Richmond R. 1 4. Port Macquarie 10. Sydney 1 2 3 4 10 11 12. Illawarra 2 4. 38♂ 29♀. Port Macquarie 3.4/1918

The female varies considerably in the extent of the faint orange spots above: some examples are almost spotless.

Toronto WDF. Richmond R. 3.9.10. GAW 1922

Richmond R. 5. GAW 1922

303. **Cephrenes trichopepla. Fig. 676, 677.**

Transactions Royal Society South Australia 1908, p. 315.

♂. Above. Forewing black: cell, except extreme end, pale orange: costa to beyond threefourths and just reaching the subapical spots, pale orange: three elongate transverse subapical spots, pale orange with veins thence to apex narrowly edged pale orange: a broad discal band of confluent spots from vein 1a to vein 6, pale orange, the last one in area 5 small and touching subapical spots: veins from discal spots to termen, except vein 1a, narrowly edged pale orange: a streak along dorsum, and a faint streak in base of area 1a, pale orange: cilia brown-black with tips pale orange. Hindwing black: a faint spot in cell and a broad discal band of confluent spots, pale orange: cilia pale orange and at tornus broadly orange.

Beneath. Forewing black: apex suffused greenish yellow: a large spot in cell, and three elongate transverse subapical spots, pale orange edged black: discal band as above but the spots larger, that in area 1a largest and yellow, and outwardly edged black. Hindwing greenish yellow: a tornal patch black: cell spot and discal band as above, but irregularly edged with black dots.

♀. Above and Beneath as in male: termen of forewing more rounded.

Loc. Cape York 3 4 10. Thursday Is. 9. Prince of Wales Is. 5. Darnley Is. 4 5 12. Murray Is. 9. Cooktown 11. Cairns 4. Kuranda 4. Ingham 4 5 8 9. Townsville 2 3 4 6 7 11. Mackay 4 8 11 12. Darwin 4 9 12. 31♂ 17♀.

This is the only species of the genus in which the female is as brightly orange as the male.

304. **Cephrenes aruana** Ploetz. (Aru Is.)

This aberrant species of the genus has an indistinct sexmark in the male. It does not conform to our definition of *Telicota*: its tegumen is of a different type, but much nearer that of *Cephrenes* than that of *Telicota.*

304a. **C. aruana autoleon** Miskin. **Fig. 694, 695.**

Proceedings Royal Society Queensland 1889, p. 147.

♂. Above. Forewing rich reddish black: base dusted orange: three faint transverse subapical spots (that nearest costa sometimes absent), orange: a discal band of spots from vein 1a to vein 4, with an extra minute dot placed nearer termen in area 4, bright orange: a faint streak along dorsum and a faint streak in area 1a, orange: cilia reddish brown, at tornus faintly orange: an irregular interrupted sexmark along inner edge of discal band from vein 1a to vein 4, dull black. Hindwing reddish black: a discal band of confluent spots, orange: cilia orange.

Beneath. Forewing reddish black: costa narrowly and apex very broadly, red-brown: a faint streak in cell, orange: spots and discal band as above, but paler. Hindwing red-brown: a tornal patch and a broad streak along dorsum, reddish black: faint traces of a discal band, orange.

♀. Above. Forewing as in male: termen more convex: spots of discal band as in male, but that in area 2 larger: sexmark absent. Hindwing as in male: discal band more obscure and spots less confluent.

Beneath as in male.

Loc. Cape York 3 4 5 7 8 9. Thursday Is. 1. Claudie R. 1. Cairns 2 6 8 9 11. Kuranda 1 2 3 4 7 8 9 10 11 12. Cardwell (type). Ingham 5. Mackay 1 4 5 8. 28♂ 19♀.

305. **Cephrenes amalia** Semper. **Fig. 686, 687.**

Journal Museum Godeffroy, Vol. XIV, p. 183, 1878.

♂. Above. Forewing brown: base and dorsum faintly dusted orange-brown: three small transverse subapical spots (that nearest costa sometimes absent), yellow, hyaline: a series of three discal spots from vein 2 to vein 5, yellow, hyaline, that in area 2 much the largest: cilia brown with tips yellow-brown. Hindwing brown: a series of four irregular discal spots, pale yellow, hyaline: cilia whitish.

Beneath. Forewing brown: costa and apex broadly suffused yellow-brown: spots as above. Hindwing yellow-brown: spots as above.

♀. Above. Forewing brown: subapical and discal spots as in male, slightly larger and pale yellow, hyaline: cilia brown with tips yellow-brown. Hindwing brown: a series of four irregular discal spots, pale yellow, hyaline: cilia whitish.

Beneath. Forewing brown: costa and apex broadly yellow-brown: spots as above. Hindwing yellow-brown: spots as above.

Loc. Cairns 6. Kuranda 3 4 7 10. Ingham 4 5 9. Townsville 4. Mackay 3 4 5. Rockhampton (type). Brisbane 1 2 3 4 5. 30♂ 17♀.

This species with its hyaline spots and exceptionally short antennae shows strong affinity with *Parnara*, but its tegumen at once places it with *Cephrenes.* Mabille's *Pamphila sigida* (placed with *T. peroni* and *T. parvula* in the Genera Insectorum) is probably a synonym of this species.

Cephrenes augustula Herrich-Schaeffer.

Stettiner Entomologische Zeitung 1869, p. 79.

♂. *Above. Forewing dark brown: a divided spot in end of cell, orange: costa and base of cell dusted orange: three elongate transverse subapical spots, orange: a broad discal band of confluent spots from vein 1a to vein 5, orange, that in area 2 paler: a streak along dorsum, orange: cilia brown-black, at tornus narrowly orange. Hindwing dark brown: a spot in cell and a discal band of confluent spots, orange with the two central spots paler: cilia orange.*

Beneath. Forewing dark brown: costa and apex broadly orange-brown: spots and band as above. Hindwing orange-brown: cell spots as above: discal band as above, but interrupted at vein 2.

Loc. Townsville (*Lower*) 1. 1♂.

This description is drawn from a single example in the Lower collection, which bears a Townsville label in the handwriting of Mr. F. P. Dodd. We can only regard it as an accidental importation from Fiji, where the species is not uncommon.

Genus TELICOTA Moore.

Lepidoptera of Ceylon, i, p. 169, 1881.

Antennae more than half the length of costa: club moderate and distinct, with apiculus slender and pointed. Palpi with third joint short, stout and suberect. Forewing with apex acute: vein 5 nearer to vein 4 than to vein 6: vein 3 equidistant between vein 4 and vein 2 in male, but nearer to vein 4 than to vein 2 in female: vein 2 slightly nearer to vein 4 than to base of wing in male, but slightly nearer to base of wing than to vein 4 in female: male with a broad discal sexmark. Hindwing slightly produced at tornus, and concave between vein 1a and vein 2. Tegumen very distinctive, with a pair of long slender blades from a common base. (**Fig. AQ**).

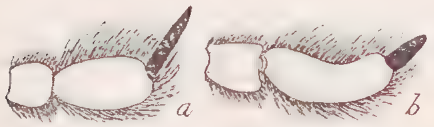

Fig. AP. Palpi of (a) *Padraona marnas.* (b) *Telicota augias* (enlarged).

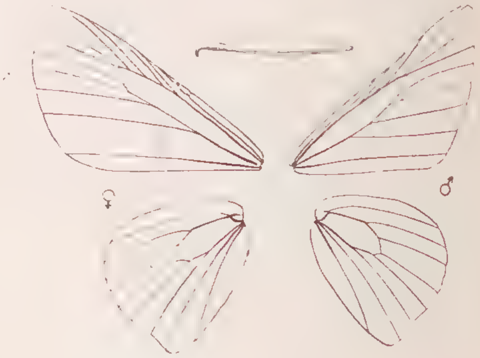

Fig. AQ. Wing venations and antenna of *Telicota augias* (enlarged).

Type. *Telicota augias* Linne, from Java.

Foodplant. *Imperata arundinacea* and other robust grasses.

306. **Telicota augias** Linne. (Java).

306a. **T. augias kreffti** Macleay. **Fig. 683, 684, 702, 703, 868, 869.**

Proceedings Entomological Society N. S. Wales 1866, p. liv.

♂. Above. Forewing brown-black: cell and base and costa up to and including three elongate subapical spots, orange, with veins thence to apex often narrowly edged orange: a broad discal band of confluent spots from vein 1a to vein 6 with those in areas 4 and 5 only half the breadth of the lower ones, orange, often continued narrowly along upper or both edges of veins towards or to termen: a streak along dorsum, and a streak in base of area 1a, orange: cilia brown-black, at tornus orange: a broad discal sexmark from vein 1a to vein 4, dull black edged black. Hindwing brown-black: a large spot in cell, extending as a faint streak to base, orange: a broad irregular discal band of confluent spots, orange, sometimes extending irregularly and narrowly along veins towards termen: a broad streak along vein 1a to tornus, orange: cilia orange.

[illegible] narrower. [illegible]

[illegible] (Coldstream Lake [illegible]) [illegible] Atlantic [illegible]. [illegible]

[illegible] and specimens are themselves variable; they all merge gradually into [illegible] of both sexes. We have carefully examined [illegible]

[illegible]

[illegible] the lower ones, dark orange; [illegible]

[illegible] brownish [illegible]

[illegible] obscure [illegible] along dorsum, [illegible]

[illegible] along dorsum, [illegible] a narrow irregular [illegible]

[illegible] dots [illegible] distinct [illegible]

BENEATH. Forewing brown-black: costa and apex broadly suffused orange-brown: a large spot in cell, and three large discal spots in areas 1a, 2 and 3, orange-yellow, lowest one paler: upper discal spots and subapical spots as above, usually pale orange-brown, sometimes merged in the orange-brown of apex, sometimes outwardly edged brown. Hindwing orange-brown: sometimes an obscure tornal patch, brown-black: cell spot and discal band as above but yellow-brown, often irregularly and sometimes obscurely edged with interrupted lines or irregular dots, brown-black, and sometimes merged in the orange-brown.

♀. ABOVE. Forewing dark brown: a large spot in end of cell and produced narrowly along median, orange: an obscure interrupted subcostal streak just reaching subapical spots, orange: three elongate transverse subapical spots, orange: a discal band of spots from vein 1a to vein 6, those in areas 4 and 5 only half the breadth of the lower ones, orange: a faint streak along dorsum, and a very faint streak in base of area 1a, orange: cilia brown-black, at tornus orange. Hindwing dark brown: a small spot in cell, and an irregular discal band of confluent spots, orange: a streak along vein 1a to tornus, orange: cilia orange.

BENEATH. Forewing as in male: discal band narrower. Hindwing as in male: an obscure tornal patch, brown: discal band narrower.

Loc. Cape York 2 3 4 5 8 9 10 11. Thursday Is. 1. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 5 6 12. Murray Is. 8 9. Claudie R. 2 3 11. Cooktown 1 10. Cairns 6 7 8 10 11 12. Kuranda 1 2 3 4 5 6 7 8 11 12. Atherton 1 3 8. Herberton 1 12. Innisfail 10. Ingham 4 5 8 9. Townsville 6. Mackay 1 2 3 4 8 9 11. Brisbane 2 6. Stradbroke Is. 12. Richmond R. 1 2 4 9 10. Bellingen 11. Manning R. 3. Sydney 2 3 4 5 6 10 11 12. Illawarra 3 4. Moruya 12. Darwin 5 9 11. 115♂ 74♀. Port Macquarie 3.4/1913

Many names have been given this subspecies. Freshly emerged southern examples with greenish yellow suffusion beneath have been called *olivescens* by Herrich-Schaeffer. Northern examples with hindwing beneath a uniform orange-brown without markings have been named *argeus* by Ploetz. The form in which markings beneath are most pronounced and often edged darker, has been named *ancilla* by Herrich-Schaeffer. The type specimen (a male) in the Australian Museum has the hindwing beneath uniformly orange, with faint markings.

These named varieties are themselves variable: they all merge gradually into each other and there are no reliable parting lines. Our long series consists of picked examples from hundreds of specimens from a long list of localities. We have carefully examined the genitalia of a series of each of the four named varieties, as well as of intergrades between them, and we are unable to detect any differences whatever. Macleay's name has priority, and the others can only be regarded as synonyms.

307. **Telicota brachydesma** Lower. **Fig. 671, 672, 878, 879.**

Transactions Royal Society South Australia 1908, p. 312.

♂. ABOVE. Forewing brown-black: cell and base and costa up to and including three elongate subapical spots, dark orange: a discal band of confluent spots from vein 1a to vein 6, with those in areas 4 and 5 only half the breadth of the lower ones, dark orange: a faint streak along dorsum and a faint streak in base of area 1a, dark orange: cilia brown-black, at tornus faintly orange: a discal sexmark from vein 1a to vein 4, dull black edged black. Hindwing brown-black: an obscure dot in cell, and an irregular discal band of confluent spots, dark orange: cilia dark orange.

BENEATH. Forewing brown-black: costa and apex broadly suffused dull orange-brown: a spot in cell, and three large discal spots in areas 1a, 2 and 3, orange, lowest one paler: upper discal spots and subapical spots as above, pale orange-brown, outwardly edged brown. Hindwing dull orange-brown: a tornal patch, extending as an obscure streak along dorsum, brown-black: cell dot and discal band as above, but yellow-brown obscurely edged with irregular dots, brown-black.

♀. ABOVE. Forewing dark brown: an obscure dot in end of cell, and three small transverse subapical spots, dark orange: a narrow discal band of spots from vein 1a to vein 6, upper ones as in male but smaller, dark orange: a narrow streak along dorsum, dark orange: cilia brown-black, at tornus faintly orange. Hindwing brown-black: a narrow irregular discal band of spots, dark orange: cilia dark orange.

BENEATH. Forewing as in male: cell spot reduced to a small dot: discal band narrower. Hindwing dull yellow-brown: markings as in male: cell dot absent: discal band narrower.

Loc. Cooktown 10. 2♂ 1♀.

The tegumen of this species, though of the same general pattern as that of *augias*, is distinct: otherwise we should have hesitated at considering it more than another variety of that species. The cell spot of the hindwing is absent in the female and is not extended as a streak to base in the male. Lower's note regarding the types of this species (Trans. Roy. Soc. S. A. 1911, p. 159) is incorrect; his earlier note in same Transactions 1908, p. 315, is the true one: the types are in collection Waterhouse.

308. **Telicota eurychlora** Lower. **Fig. 692, 693, 861.**

Transactions Royal Society South Australia 1908, p. 314.

♂. Above. Forewing dark brown: cell and base and costa up to and including three elongate subapical spots, pale orange: a narrow discal band of spots from vein 1a to vein 6, those in areas 4 and 5 only half the breadth of the lower ones, pale orange: a faint streak along dorsum and a faint streak in base of area 1a, pale orange: cilia brown-black, at tornus pale orange: a discal sexmark from vein 1a to vein 4, dull black edged black. Hindwing dark brown: a spot in cell, and a broad irregular discal band of confluent spots, pale orange: an obscure streak along vein 1a to tornus, pale orange: cilia pale orange.

Beneath. Forewing dark brown: costa and apex broadly suffused dull red-brown: cell, except base, yellow: three large discal spots in areas 1a, 2 and 3, yellow, lowest one paler: upper discal spots and subapical spots obscured in the red-brown of apex. Hindwing dull red-brown: an obscure tornal patch, brown: faint traces of a cell spot and a discal band of spots, yellowish.

♀. Above. Forewing dark brown: a large spot in end of cell, and three minute transverse subapical spots, pale orange: a very irregular band of discal spots from vein 1a to vein 6, upper ones as in male but smaller, pale orange: cilia dark brown. Hindwing dark brown: a small obscure spot in cell, and an irregular discal band of spots, pale orange: cilia pale orange.

Beneath as in male: discal bands narrower.

Loc. Ingham 8 9. Richmond R. 1 2 4 10. Port Macquarie 10. 3/1915 4♂ 8♀.

This species is distinctly paler than *augias*, and the genitalia are widely different.

309. **Telicota ohara** Ploetz. **Fig. 685, 696, 697.**

Stettiner Entomologische Zeitung 1883, p. 226.

♂. Above. Forewing brown-black: cell, except base, dark orange: costa to beyond cell and just reaching subapical spots, dark orange: three elongate transverse subapical spots, dark orange: a narrow band of discal spots from vein 1a to vein 6, with those in areas 4 and 5 only half the breadth of the lower ones, dark orange: veins from subapical spots to apex faintly edged dark orange: veins from discal band towards termen sometimes faintly dark orange along the upper edge: a faint streak along dorsum, and a very faint streak in base of area 1a, dark orange: cilia brown-black, at tornus faintly dark orange: a narrow discal sexmark from vein 1a to vein 4, dull black edged black. Hindwing brown-black: a faint spot in cell and a narrow discal band of rarely confluent spots, dark orange: a narrow streak along vein 1a to tornus, dark orange: cilia dark orange.

Beneath. Forewing brown-black: costa narrowly and apex broadly, red-brown: a spot in cell and three discal spots in areas 1a, 2 and 3, orange-brown, lowest one sometimes paler: upper discal and subapical spots obscured in the red-brown of apex. Hindwing dull red-brown: faint traces of a discal band of spots, orange.

♀. Above. Forewing brown-black: an elongate spot in end of cell, and three small transverse subapical spots, dark orange: a discal band of spots as in male but narrower: a faint streak along dorsum, dark orange: cilia brown-black, at tornus faintly orange. Hindwing as in male: cell spot absent: discal band narrower.

Beneath as in male: sometimes faintly tinged lilacine brown.

Loc. Cape York 3 5 7 8 9 10. Thursday Is. 1 12. Claudie R. 1 2 3. Cairns 6 7 8. Kuranda 1 2 3 4 5 12. Ingham 4. Mackay 4. 19♂ 12♀.

310. **Telicota anisodesma** Lower. **Fig. 701, 862.**

Transactions Royal Society South Australia 1911, p. 157.

♂. Above. Forewing rich brown-black: cell bright orange: costa from base reaching to and including three elongate subapical spots, bright orange, with veins from thence to apex narrowly edged orange: a broad discal band of confluent spots from vein 1a to vein 6, with those in areas 4 and 5 only half the breadth of the lower ones, bright orange, and often continued very narrowly along veins to termen: a streak along dorsum, and a streak in base of area 1a, bright orange: cilia brown-black, at tornus orange: a discal sexmark from vein 1a to vein 4, dull black edged black. Hindwing rich brown-black: a spot in cell, and an irregular discal band of confluent spots, bright orange: a faint streak along vein 1a and sometimes reaching tornus, orange: cilia orange.

Beneath. Forewing brown-black: costa and apex suffused orange-brown: a large spot in end of cell, bright orange: three discal spots in areas 1a, 2 and 3, orange with lowest one paler: upper discal and subapical spots more or less merged in orange-brown of apex. Hindwing orange-brown: an obscure tornal patch, brown-black: cell spot and discal band as above, but dull orange and irregularly and obscurely edged brown-black.

♀. Unknown.

Loc. Townsville (*Lower*). Mackay (*Lower*). Brisbane 2 11. Richmond R. 1 2 4. 6♂.

Genus **PARNARA** Moore.

Lepidoptera of Ceylon, i, p. 166, 1881.

Antennae about half the length of costa: club distinct (shorter than in *Telicota*), with apiculus slender and pointed (**Fig. AO 7, 8**). Palpi with third joint very short and blunt, almost hidden by the hairs of second joint, porrect. Forewing with apex acute: vein 5 nearer to vein 4 than to vein 6: vein 3 much nearer to vein 4 than to vein 2: vein 2 much nearer to vein 4 than to base of wing: male sometimes with a short oblique sexmark between vein 1a and vein 2. Hindwing with termen concave between vein 1a and vein 2.

Type. *Parnara guttatus* Bremer & Grey, from China.

This genus is easily distinguished by its short antennae, and by the discal band of forewing being divided into distinct hyaline spots. Lower includes under this genus in his 1911 Revision *Pamphila impar* Mabille and *Pamphila sigida* Mabille. Mabille himself appears to have discarded *impar,* for he fails to mention it in the Genera Insectorum. That *P. sigida* is probably only a synonym of *Cephrenes amalia* Semper, is our own suggestion (Victorian Naturalist 1904, p. 110).

311. **Parnara laraca** Swinhoe. **Fig. 743, 744.**

Annals Magazine Natural History 1907, p. 434.

♂. Above. Forewing grey-brown: costa, base and dorsum suffused yellow-brown: a pair of spots in end of cell, pale yellow, hyaline: a basally curved series of three subapical dots, pale yellow, hyaline: a series of three irregular discal spots in bases of areas 2, 3 and 4, pale yellow, hyaline, with that in area 2 the largest: an elongate discal spot in lower edge of area 1a, yellow: cilia grey. Hindwing grey-brown suffused yellow-brown: a pair of small distinct discal spots in areas 2 and 3, yellow, hyaline: cilia grey.

Beneath. Forewing grey-brown: costa, apex and termen broadly suffused yellow-brown: hyaline spots and dots as above: a broad cloudy discal spot in area 1a, whitish. Hindwing yellow-brown: hyaline spots as above.

♀. Above. Forewing grey-brown: base suffused olive brown: spots and dots as in male, but cell spots smaller and discal spot in lower edge of area 1a narrower. Hindwing grey-brown suffused olive brown: a pair of discal spots as in male: cilia grey.

Beneath. Forewing grey-brown: costa, apex and dorsum broadly suffused olive brown: hyaline spots and dots as above: a broad cloudy discal spot in area 1a, whitish. Hindwing olive brown: hyaline spots as above.

Loc. Banks Is. 2. Darwin 2 3 4 5 10 11 12. 26♂ 9♀.

The largest Australian species of the genus. Swinhoe described it from Woodlark Is., and Fruhstorfer places it as a subspecies of *P. conjuncta.* Female examples from Banks Is. have the hyaline spots and dots smaller, especially those in cell.

312. **Parnara guttatus** Bremer & Grey. (China).

312a. **P. guttatus bada** Moore. **Fig. 714, 715.**

Proceedings Zoological Society London 1878, p. 688.

♂. Above. Forewing grey-brown: sometimes a minute dot in lower apex of cell, white, hyaline: three transverse subapical dots, white, hyaline, with that nearest costa sometimes obscured: a discal spot in base of area 2, a smaller one in base of area 3, and rarely a minute one in base of area 4, white, hyaline: cilia grey. Hindwing grey-brown: a pair of discal dots in areas 2 and 3, white, hyaline: cilia grey.

Beneath. Forewing grey-brown: costa and apex suffused pale grey-brown: spots and dots as above. Hindwing pale grey-brown: hyaline dots as above.

♀. Above. Forewing as in male: discal spots elongate, and dot in base of area 4 usually present and larger. Hindwing as in male.

Beneath. Forewing as in male: spots and dots as above. Hindwing as in male.

Loc. Kuranda 1 3 4 6 12. Herberton 1. Mackay 4. Brisbane 1 4 5. 14♂ 9♀.

The type of this species is from Ceylon: previous Australian writers have identified it as *P. colaca*. We have one male example in which the pair of hyaline dots of hindwing are absent.

313. **Parnara colaca** Moore. **Fig. 778, 779.**

Proceedings Zoological Society London 1877, p. 594.

♂. Above. Forewing grey-brown: sometimes a minute dot in upper apex of cell, white, hyaline: a basally curved series of three minute subapical dots, white, hyaline: a discal spot in base of each area, 2, 3 and 4, white hyaline, with that in area 2 much the largest: a discal dot in lower edge of area 1a, whitish: cilia grey. Hindwing grey-brown: usually faint traces of a pair of discal dots in areas 2 and 3, whitish: cilia grey.

Beneath. Forewing grey-brown: costa and apex broadly olive brown: dots and spots as above. Hindwing olive brown: a pair of small discal dots in areas 2 and 3, and a third in area 6, whitish.

♀. Above. Forewing as in male: discal dot in area 1a, larger. Hindwing as in male.

Beneath as in male.

Loc. Darnley Is. 4 5 6 12. Banks Is. 2 3. Murray Is. 9. 11♂ 14♀.

This species is at once distinguished from *P. guttatus bada* by the curved subapical dots of forewing, and by the extra discal dot on hindwing beneath. The type is from the Andaman Is. We have one male example with a second dot in lower apex of cell of forewing above.

314. **Parnara mathias** Fabricius. **Fig. 711, 712, 713.**

Entomologia Systematica, Suppl. p. 433, 1798.

♂. Above. Forewing grey-brown: base and dorsum suffused olive brown: a pair of dots in end of cell, white, hyaline: a basally curved series of three minute subapical dots, white, hyaline: three small irregular discal spots in bases of areas 2, 3 and 4, white, hyaline: cilia grey: a narrow oblique discal sexmark across area 1a, dull grey-brown. Hindwing grey-brown suffused olive brown: cilia grey.

Beneath. Forewing grey-brown: costa, apex and termen suffused pale grey-brown: dots and spots as above. Hindwing pale grey-brown: a dot in cell, and a series of four discal dots in areas 2, 3, 4 and 6, whitish.

♀. Above. Forewing grey-brown: dots and spots as in male, but larger: an extra discal spot in lower edge of area 1a, white: cilia grey. Hindwing grey-brown: cilia grey.

Beneath. Forewing grey-brown: costa, apex and termen suffused pale grey-brown: dots and spots as above. Hindwing as in male.

Loc. Cape York 4 5 7 8 9. Thursday Is. 4 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 5 6. Claudie R. 1 2. Cooktown 4 11. Cairns 4 6 7 11. Kuranda 1 2 3 4 5 6 7 9. Ingham 4 5 8 9. Townsville 3 4 5 6 7. Mackay 1. 2 3 4 5 7 8 11 12. Brisbane 4. Darwin 3 9 12. 67♂ 63♀.

The most abundant and wide ranging of the genus. Some of our male examples have some or all of the dots and spots of forewing absent: some female examples show an extra small spot in area 1a of forewing above, and faint traces of discal dots on hindwing above.

PARNARA MATHIAS LYELLI Jordan Novitates (GAW 10.4.16)

Wyndham (W H Michin) Jan 1916.

Genus **SABERA** Swinhoe.

Transactions Entomological Society London 1908, p. 30.

Antennae much more than twothirds the length of costa: club distinct and long, with apiculus short and pointed (**Fig. AO 9, 10**). Palpi with third joint very short and blunt, almost hidden by the hairs of second joint, and erect. Forewing with apex acute: vein 5 nearer to vein 4 than to vein 6: vein 3 much nearer to vein 4 than to vein 2: vein 2 about equidistant between vein 4 and base of wing: male with or without a discal sexmark. Hindwing with termen evenly rounded.

Type. *Sabera caesina* Hewitson, from Waigiou.

We have defined the genus to suit two species showing affinities in the extremely long antennae, the white cilia of the hindwing, and the peculiar colour beneath: a new genus may eventually be needed for *fuliginosa*.

315. **Sabera caesina** Hewitson. (Waigiou).

315a. **S. caesina albifascia** Miskin. **Fig. 566, 569.**

Proceedings Royal Society Queensland 1889, p. 148.

♂. Above. Forewing brown-black tinged purple: rarely three transverse subapical dots, white, upper two often obscured: an irregular curved series of small discal spots, white, first in area 1a, narrow and sometimes divided, second in area 2, largest and subquadrate, third in base of area 3, triangular, fourth in area 4, placed nearer termen, small, fifth in area 5, small and often divided, and completing the curve of the discal spots to the lowest of the subapical dots: cilia brown-black, at tornus narrowly white. Hindwing brown-black tinged purple: a broad discal band of confluent spots from vein 1a to vein 6, white: cilia brown-black, at tornus narrowly white. Clubs of antennae white.

Beneath. Forewing brown-black: costa narrowly and apex broadly, mahogany brown: subapical dots larger than above, usually all present, and middle one minute: discal spots as above. Hindwing mahogany brown: discal band as above: a basal area reaching to discal band between vein 2 and vein 4, white: an obscure streak along dorsum to about half, whitish.

♀. Above. Forewing as in male but longer: termen slightly more convex. Hindwing as in male: discal band slightly broader.

Beneath as in male.

Loc. Cape York 1 4 5 7 8 9 10 11. Prince of Wales Is. 5 6. Banks Is. 2 3. Claudie R. 1 2 3. Cairns 6 11 12. Kuranda 1 2 3 4 9 10 11 12. Herbert R. (type). 65♂ 27♀.

316. **Sabera fuliginosa** Miskin. **Fig. 737**

Proceedings Royal Society Queensland 1889, p. 147.

♂. Above. Forewing brown-black: cilia brown-black: a narrow discal sexmark from vein 1a to vein 4, dull black. Hindwing brown-black: cilia from vein 4 to tornus, broadly white.

Beneath. Forewing brown-black: costa narrowly and apex broadly, mahogany brown. Hindwing mahogany brown: a small dot in cell, and a series of four small discal spots from vein 1a to vein 6, blue-grey obscurely ringed brown-black.

♀. Above. Forewing as in male but longer: termen slightly more convex: sexmark absent. Hindwing as in male.

Beneath as in male.

Loc. Kuranda 1 2 3 4 5 6 7 10 11 12. Cardwell (type). 18♂ 7♀.

The broadly white cilia of tornal half of hindwing contrasts vividly with the spotless almost black wings.

Genus **NOTOCRYPTA** de Niceville.

Journal Bombay Natural History Society 1889, p. 188.

Antennae about twothirds the length of costa: club distinct, with apiculus short and pointed (**Fig. AO 11**). Palpi with third joint short, stout, bluntly conical and suberect. Forewing broad: vein 5 nearer to vein 4 than to vein 6: vein 3 much nearer to vein 4 than to vein 2: vein 2 much nearer to base of wing than to vein 4: male without a discal sexmark. Hindwing with termen evenly rounded: vein 5 often feebly developed.

Type. *Notocrypta feisthameli* Boisduval, from Bouru (= *N. curvifascia* Felder, from China).

317. **Notocrypta waigensis** Ploetz. (Waigiou).

Fruhstorfer has examined many of the forms of *Notocrypta*, and considers they are not all geographical races of *feisthameli*. The Australian race he places as a subspecies of *waigensis* Ploetz, and mentions other subspecies in Waigiou, Key Is., Aru Is., German New Guinea, and the Bismarck Archipelago.

317a. **N. waigensis leucogaster** Staudinger. **Fig. 736.**

Iris 1889, p. 155.

♂. Above. Forewing black: a broad band from costa at half to vein 1a at about fourfifths, white, hyaline: a subapical dot in area 7, and often a minute subapical dot in area 8, white, hyaline: a subterminal dot in area 4, and sometimes a pair of minute dots in areas 5 and 6, completing a curved series of five irregular subapical dots, white, hyaline: sometimes an extra dot in area 3, midway between band and subterminal dot in area 4, white, hyaline: cilia black. Hindwing black: cilia black.

Beneath. Forewing black: band and dots as above. Hindwing dull black.

♀. Above and Beneath as in male: forewing longer.

Loc. Cape York 1 4 5. Prince of Wales Is. 5 6. Banks Is. 2 3. Darnley Is. 4. Claudie R. 1 2 3. Cairns 2 5 6 11. Kuranda 2 3 4 5 7 8 9 10 11. Ingham 4 5. 35♂ 27♀.

Quite unlike any other Australian Hesperid: the margins of the broad white band of forewing are irregular, and its width is somewhat variable but usually broadest at the centre.

Subfamily **ISMENINAE.**

Imago. Of moderately large size and very robust build. When in a state of complete repose, the butterflies rest with their wings erect and the upper surfaces pressed closely together. Antennae short with club gradual and hooked, and with apiculus long and tapering to a point. Palpi with third joint long, slender and porrect. Eyes dark brown or black. Forewing with vein 5 arising from cell equidistant between vein 4 and vein 6, or slightly nearer to vein 6: base of wing clothed with long hairs. Hindwing (in Australian species) with vein 5 present and tubular: termen produced at vein 1a: base and dorsum clothed with long hairs, more dense towards tornus. Males with or without a discal sexmark on forewing above. Hind tibiae densely fringed in both sexes. (**Fig. AR**).

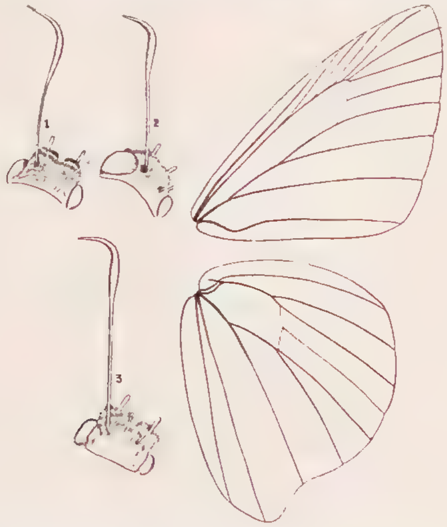

Fig. AR. Venation of *Hasora discolor.* Head of 1. *Badamia exclamationis.* 2. *Parata contempta.* 3. *Hasora discolor.* (enlarged).

This in our opinion forms a natural subfamily of equal value with the *Hesperinae.* The presence of vein 5 of hindwing separates it from the *Trapezitinae* and the *Erynninae,* and the peculiar palpi provide an important character which, together with the attitude when at rest, distinguish it at once from the *Hesperinae.* A few American genera have somewhat similar palpi, but these have quite different antennae.

The species of this subfamily are to be found throughout the Indo-Australian Region, and one genus extends as far as Africa.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Key to the Genera of *ISMENINAE*.

A. Cell of forewing more than twothirds the length of costa: vein 3 of hindwing arising well before the end of cell .... *Badamia.*
B. Cell of forewing less than twothirds the length of costa: vein 3 of hindwing arising just before the end of cell.
  a. Vein 1a of forewing distorted near base.
    a^1. Forewing with sexmark in male .... *Parata.*
    b^1. Forewing without sexmark in male .... *Hasora.*
  b. Vein 1a of forewing not distorted near base .... *Allora.*

Genus **BADAMIA** Moore.

Lepidoptera of Ceylon, i, p. 156, 1881.

Antennae less than half the length of costa. Forewing very elongate, costa slightly arched, apex acute, termen slightly concave: cell more than twothirds the length of costa: vein 12 reaching costa before end of cell: veins 6, 7 and 8 crowded together at their bases: vein 5 slightly nearer to vein 4 than to vein 6: vein 1a not bent near base: male without a discal sexmark. Hindwing with termen concave and strongly produced at vein 1a: vein 3 and vein 4 wide apart at base: hairs of dorsum, especially in the female, thickening to a stiff brush in area 1a just before tornus. (**Fig. AR 1**).

TYPE. *Badamia exclamationis* Fabricius, from India.

Distinguished from the other genera by the elongate forewing, and the strongly concave hindwing.

318. **Badamia exclamationis** Fabricius. **Fig. 733, 734, 735.**

Systema Entomologiae, p. 530, 1775.

♂. ABOVE. Forewing brown: base pale brown: sometimes a minute elongate spot about middle of cell, pale yellow, hyaline: usually a pair of small elongate discal spots in upper edges of areas 2 and 3, pale yellow, hyaline: cilia brown. Hindwing brown: base and dorsum pale brown: cilia brown with tips grey-brown.

BENEATH. Forewing brown: costa and apex broadly suffused yellow-brown: a cloudy discal spot, divided by vein 1a, pale yellow: spots as above. Hindwing yellow-brown: a patch at tornus, brown: a cloudy subterminal spot in area 1a, pale yellow: a terminal line, pale yellow.

♀. ABOVE. Forewing brown: base paler brown: an elongate spot about middle of cell, pale yellow, hyaline: rarely traces of three oblique subapical dots, pale yellow, hyaline: an irregular elongate discal spot in area 2, and a small triangular discal spot in upper edge of area 3, pale yellow, hyaline: usually an irregular discal streak just above vein 1a, pale yellow: cilia brown. Hindwing brown: base and dorsum pale brown: cilia brown with tips grey-brown.

BENEATH as in male: hyaline spots as above.

LOC. Thursday Is. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 12. Claudie R. 1 2 3. Lloyd Is. 2. Cooktown 4 10 11. Cairns 1 2. Kuranda 2 3 4. Ingham 4 5 9. Townsville 1 2 4 6. Mackay 1 2 3 4. Gympie. Brisbane. Richmond R. 13,4. Sydney. Darwin 12. 29♂ 19♀.

Westwood ♀ (ANB) 18.11.23. 20.11.24

A very wide ranging species, which, excepting perhaps in Fiji, does not appear to have developed geographical races. Great flights of this butterfly have on several occasions been noted in Queensland.

Genus **ALLORA** nov.

Antennae about half the length of costa. Forewing with costa nearly straight, apex subacute, termen nearly straight: cell less than twothirds the length of costa: vein 5 very slightly nearer to vein 6 than to vein 4: vein 3 much nearer to end of cell than to base of wing: vein 1a not bent near base: male without a discal sexmark. Hindwing with termen slightly produced at vein 1a: vein 3 and vein 4 close together at base.

TYPE. *Allora doleschalli* Felder, from the Moluccas.

This genus is distinguished from *Hasora* by vein 1a of forewing being straight instead of distorted.

319. **Allora doleschalli** Felder. (Amboina).

We had anticipated placing this species in the genus *Bibasis* Moore, but the type of Moore's genus (*B. sena*) differs very considerably both in shape and in general appearance.

319a. **A. doleschalli simessa** Fruhstorfer. **Fig. 719, 720.**

Iris 1911, p. 64.

♂. Above. Forewing black: basal third brilliant metallic blue-green: cilia black. Hindwing black: base and dorsum brilliant metallic blue-green: cilia black.

Beneath. Forewing greenish black: a small spot in cell, bluish white: a band of discal spots from vein 1a to vein 4, bluish white and near dorsum cloudy: a faint interrupted subterminal line from costa to vein 2, bluish white. Hindwing greenish black: a small spot in cell, and a small discal spot in area 1a, bluish white: sometimes faint traces of a series of obscure discal spots, bluish white: a terminal line from vein 3 to dorsum, bluish white. Legs orange.

♀. Above and Beneath as in male: apex of forewing slightly broader.

Loc. Cape York 7 10. Thursday Is. 1 4 5. Prince of Wales Is. 5 6 7. Banks Is. 3. Cooktown 11 12. Kuranda 1 5 10. 15♂ 5♀.

Genus **HASORA** Moore.

Lepidoptera of Ceylon, i, p. 159, 1881.

Antennae about half the length of costa. Forewing with costa nearly straight, apex subacute, termen nearly straight: cell less than twothirds the length of costa: vein 12 reaching costa just before end of cell: vein 5 slightly nearer to vein 6 than to vein 4: vein 3 nearer to end of cell in female than in male: vein 1a sharply bent near base: male without a discal sexmark. Hindwing with termen slightly produced at vein 1a: vein 3 and vein 4 close together at base. (**Fig. AR 3**).

Type. *Hasora badra* Moore, from India.

This genus is distinguished by the distortion of vein 1a of the forewing, and by the absence of a discal sexmark in the male.

320. **Hasora discolor** Felder. (Amboina).

320a. **H. discolor mastusia** Fruhstorfer. **Fig. 721, 722.**

Iris 1911, p. 64.

♂. Above. Forewing brown-black: base suffused dull metallic green: cilia brown-black. Hindwing brown-black: base and dorsum suffused dull metallic green: cilia brown-black.

Beneath. Forewing brown-black suffused green: a broad cloudy discal band from costa at half to near tornus, pale yellow dusted metallic green: an irregular line at end of cell, and a narrow subterminal band from costa at fourfifths to tornus, pale yellow dusted metallic green. Hindwing dull black suffused green: a very broad discal band, pale yellow, dusted at edges and at tornus with metallic green: a terminal line from apex to beyond vein 2, pale yellow dusted metallic green.

♀. Above and Beneath as in male: apex of forewing slightly broader.

Loc. Cape York 11. Cairns 9 10 11. Kuranda 2 5 9 10 11. Ingham 9. Mackay 2 3. Rockhampton 2 3 11. Brisbane 5. Richmond R. 1 2 3 4 5 10 12. 26♂ 12♀.

321. **Hasora haslia** Swinhoe. **Fig. 725, 726.**

Annals Magazine Natural History 1899, p. 107.

♂. Above. Forewing dark brown: base suffused greenish brown: cilia dark brown. Hindwing dark brown: base and dorsum suffused greenish brown: cilia dark brown, with tips grey-brown.

Beneath. Forewing dark brown: costa and apex broadly suffused yellow-brown. Hindwing yellow-brown: a patch at tornus, dark brown: a narrow discal band from costa at twothirds to tornus, white and beyond vein 1a often obscure: a terminal line pale brown, towards tornus pale yellow.

♀. Above. Forewing dark brown: base suffused greenish brown: a subapical dot in area 6, and a pair of discal spots in areas 2 and 3, pale yellow, hyaline: cilia dark brown. Hindwing as in male.

Beneath as in male: spots as above.

Loc. Brisbane 1 2 3 5 10. Richmond R. 1 2 4 9 10. Bellingen 11. Ebor 1. 13♂ 12♀.

This species has been confused with *P. bilunata* of Fiji, which has a discal sexmark on forewing in the male, so is not closely allied. It is similar in general appearance, but somewhat larger and darker than *P. chromus contempta*, but at once distinguished by the absence of the discal sexmark.

Genus **PARATA** Moore.

Lepidoptera of Ceylon, i, p. 160, 1881.

Antennae about half the length of costa. Forewing with costa nearly straight, apex subacute, termen nearly straight: cell less than twothirds the length of costa: vein 12 reaching costa just before end of cell: vein 5 slightly nearer to vein 6 than to vein 4: vein 3 nearer to end of cell in female than in male: vein 1a sharply bent near base: male with a discal sexmark. Hindwing with termen slightly produced at vein 1a: vein 3 and vein 4 close together at base. **(Fig. AR 2).**

TYPE. *Parata chromus* Cramer, from India.

This genus is distinguished by the distortion of vein 1a of the forewing, and by the presence of a discal sexmark in the male.

322. **Parata chromus** Cramer. (India).

322a. **P. chromus contempta** Ploetz. **Fig. 729, 730.**

Stettiner Entomologische Zeitung 1884, p. 56.

♂. ABOVE. Forewing brown: base suffused greenish brown: cilia brown: an obscure oblique discal sexmark from dorsum at twofifths to beyond vein 3, brown. Hindwing brown: base and dorsum suffused greenish brown: cilia brown with tips grey-brown.

BENEATH. Forewing brown: costa and apex broadly yellow-brown: apex suffused lilac: dorsum whitish. Hindwing yellow-brown suffused lilac: a patch at tornus, brown-black: a narrow discal band from costa at threefourths to tornus but interrupted by the tornal patch, white suffused lilac: a terminal line, whitish.

♀. ABOVE. Forewing brown: base suffused greenish brown: a pair of irregular discal spots in areas 2 and 3, pale yellow, hyaline: cilia brown. Hindwing as in male.

BENEATH as in male: spots of forewing as above.

LOC. Cape York 2 3 5 6 12. Thursday Is. 1 5 12. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 6. Cairns 3 8. Kuranda 4 10 11. Ingham 5 9. Townsville 1 2. Mackay. Darwin 10. 26♂ 21♀.

This subspecies is allied to *P. bilunata* from Fiji, and has been named *lucescens* by Lucas. It is variable in the width of the pale band of hindwing beneath. We include here the several species listed by Lower as *chromus* and *contempta* in his 1911 Revision, and according to his opinion differing in the width of the pale band of hindwing beneath, and in the colour of the forewing above and the abdomen beneath. We are unable to agree with his conclusions, and feel sure there is only one slightly variable species.

323. **Parata hurama** Butler. **Fig. 727, 728.**

Transactions Entomological Society London 1870, p. 498.

♂. ABOVE. Forewing dark brown: base suffused pale brown: cilia brown: an obscure oblique discal sexmark from dorsum at twofifths to beyond vein 3, brown-black. Hindwing brown: base and dorsum suffused pale brown: cilia brown, at tips grey-brown.

BENEATH. Forewing dark brown: costa and apex faintly suffused purple: dorsum whitish. Hindwing brown with a few purple scales along veins: a small obscure patch at tornus, dark brown: a broad discal band from costa at threefifths to dorsum just before tornus, white.

♀. ABOVE. Forewing as in male: apex slightly broader: sexmark absent.

BENEATH. Forewing dark brown suffused purple: dorsum whitish. Hindwing brown suffused purple: tornal patch and discal band as in male.

LOC. Cape York 2 3 4 6 7. Banks Is. 2. Cooktown 10. Cairns 3 10 12. Kuranda 1 4 10 11. Ingham 5. Townsville 4. Mackay. 11♂ 9♀.

Distinguished by the broad and continuous white band of hindwing beneath.

Parata lugubris Boisduval.

Voyage Astrolabe Lepidoptera, p. 161, 1832.

♂. *Above. Forewing brown: cilia brown: an oblique discal sexmark from dorsum at twofifths to beyond vein 3, dark brown. Hindwing brown: cilia brown.*

Beneath. Forewing brown: costa and apex broadly suffused rich purple: dorsum whitish: a faint streak on discocellulars, bluish white. Hindwing brown suffused rich purple: a small patch at tornus, dark brown: a faint narrow discal band from costa at threefifths to tornus, whitish, and between vein 1a and tornus obscure.

Loc. Cape York (*Lower*) 12. 1♂.

We have written this description from a single male in Mr. Lower's collection. Both head and body are missing and the wings are mounted upon the body of another Ismenid: so we are unable to figure it.

Subfamily **HESPERINAE.**

Ovum. Large: broader than high: coarsely ribbed vertically.

Larva. Short and stout: head large and prominent. Feeds after dark and during daylight shelters in a folded leaf of the foodplant, the edges of which it fastens together with silken threads.

Pupa. Stout and smooth: head rounded or with two short projections: tail pointed. Fastened by the tail in a shelter formed with a folded leaf.

Imago. Of robust build, and with few exceptions of large size. When in a state of complete repose the butterflies rest with their wings extended flat. Forewing with vein 5 arising nearer to vein 6 than to vein 4: sometimes with a costal fold in the male. Males without a discal sexmark on forewing above. Hind tibiae with a fringe of hairs in both sexes, but denser in the male.

Range. Worldwide.

Watson divided this subfamily into two sections according to the length of the cell of forewing. In Australian species this character varies only slightly, and as we have but eight species, the subdivision does not appear to be necessary. All Australian Hesperids with a costal fold in the male are included here: the presence of spurs on the hind tibiae proves in this subfamily to be a worthless character, for we find them sometimes present and sometimes absent in the same species.

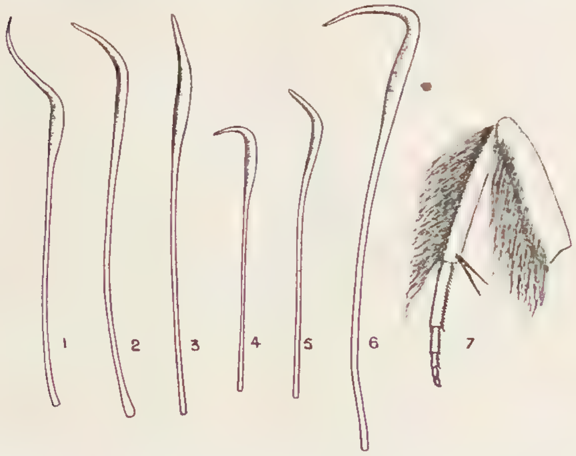

Fig. AS. Antennae of *Hesperinae* and *Euschemoninae*. 1. *Chaetocneme sphinterifera*. 2. *Chaetocneme porphyropis*. 3. *Phoenicops beata*. 4. *Netrocoryne repanda*. 5. *Tagiades gamelia* 6. *Euschemon rafflesia*. 7. Hindleg of *Chaetocneme sphinterifera*. (enlarged).

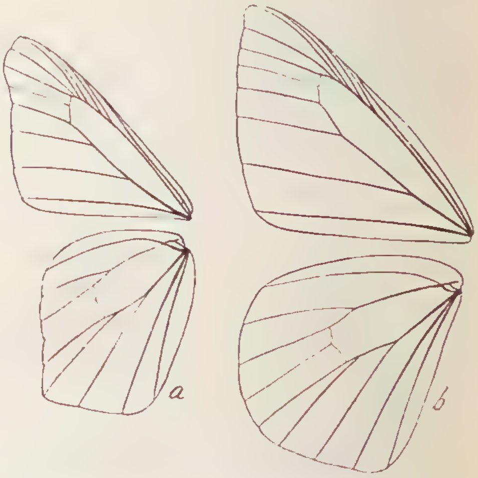

Fig. AT. Wing venations of (a) *Netrocoryne repanda*. (b) *Phoenicops denitza* (enlarged).

Key to the Genera of *HESPERINAE*.

A. Vein 5 of hindwing fully developed.	
a. Forewing of male with a costal fold	*Chaetocneme.*
b. Forewing of male without a costal fold.	
a^1. Of large size	*Phoenicops.*
b^1. Of small size	*Exometoeca.*
B. Vein 5 of hindwing only feebly developed.	
a. Apex of forewing truncate	*Netrocoryne.*
b. Apex of forewing rounded	*Tagiades.*

Genus **CHAETOCNEME** Felder.

Sitzungsberichte Akademie Wissenschaften Wien 1860, p. 460.

Antennae more than half the length of costa: club long gradual and slender (**Fig. AS 1, 2**). Hind tibiae fringed (**Fig. AS 7**). Forewing with costa nearly straight, apex subacute and termen slightly convex: cell about twothirds the length of costa: vein 12 reaching costa before end of cell: vein 5 equidistant between vein 6 and vein 4 or slightly nearer to vein 6 than to vein 4: male with a costal fold. Hindwing with termen rounded: vein 5 tubular, but not so well developed as vein 4 or vein 6.

TYPE. *Chaetocneme corvus* Felder, from Amboina.

We have reverted to the older name *Chaetocneme* for this genus, as according to the international Rules of Nomenclature it is not preoccupied by *Chaetocnema* Stephen. Kirby's action in proposing the name *Casyapa* to replace *Chaetocneme* was therefore unwarranted. The genus consists of three Papuan species each divided into a number of geographical races. The type *corvus* has brown eyes and *critomedia* has red eyes: the apiculi of the antennae of *critomedia* are longer and more slender than those of *corvus*. In *callixenus* and its allies the costal fold is much smaller.

324. **Chaetocneme critomedia** Guerin. (New Guinea).

324a. **C. critomedia sphinterifera** Fruhstorfer. **Fig. 575.**

Iris 1910, p. 103.

♂. ABOVE. Forewing red-brown: a broad band from costa at half to vein 2, and thence diminishing to vein 1a just before tornus, dull orange, semihyaline: an obscure spot in end of cell, dull orange: traces of an obscure discal spot in area 3, and another in area 1a, dull orange: cilia brown: costa with a large fold. Hindwing red-brown: a broad terminal patch from area 5 to tornus, dull orange: an obscure spot in end of cell, dull orange: cilia brown and along terminal patch, dull orange.

BENEATH. Forewing brown: a broad band as above, pale orange. Hindwing brown: terminal patch as above.

♀. ABOVE. Forewing brown: a broad band from costa at half to vein 2, and thence diminishing to vein 1a just before tornus, pale orange, semihyaline: cilia brown. Hindwing brown: a broad terminal patch from area 5 to tornus, dull orange: an obscure spot in end of cell, dull orange: cilia brown and along terminal patch, dull orange.

BENEATH. Forewing as above. Hindwing as above: spot in end of cell absent.

LOC. Cape York 1 2 3 4 7 11. Claudie R. 1. 8♂ 5♀.

This race very closely resembles *caristus* from the Aru Is. Typical *critomedia* has the orange band of forewing stopping short at vein 2.

325. **Chaetocneme porphyropis** Meyrick & Lower. **Fig. 578.**

Transactions Royal Society South Australia 1902, p. 43.

♂. ABOVE. Forewing purple-black: base suffused steely blue: a broad band from costa at half to termen just above tornus, golden, and semihyaline from subcostal to just before vein 2: cilia purple-black: costa with a very narrow fold. Hindwing purple black suffused steely blue: apex golden orange: cilia purple-black, at apex golden.

BENEATH. Forewing brown-black slightly suffused steely blue: band as above. Hindwing as above.

♀. ABOVE as in male: band of forewing slightly broader: costal fold absent.

BENEATH as in male.

LOC. Kuranda 9 10 11. Johnstone R. (type) 2. 11♂ 4♀.

This species is allied to *C. callixenus* Hewitson, and to *C. kallima* Swinhoe and may possibly be a subspecies of the former.

Genus **PHOENICOPS** Watson.

Proceedings Zoological Society London 1893, p. 30.

Antennae more than half the length of costa: club long and gradual with apiculus moderate and slender (**Fig. AS 3**). Palpi with third joint completely hidden by the hairs of second joint. Eyes red. Hind tibiae densely fringed in the male and slightly fringed in the female. Forewing with costa nearly straight, apex subacute, termen slightly angled below apex, but otherwise straight in male and slightly convex in female: cell about twothirds the length of costa: vein 12 reaching costa before end of cell: vein 5 equidistant from vein 6 and from vein 4: male without a costal fold. Hindwing with termen slightly quadrate: vein 5 present as a tubular vein. (**Fig. ATb**).

TYPE. *Phoenicops beata* Hewitson.

FOODPLANT. *Camphora officinalis. Tristania. Eugenia.*

This genus is distinguished from *Chaetocneme* by the absence of the costal fold in the male, the slightly quadrate termen of hindwing, the shorter apiculus and the hyaline spots of forewing.

326. **Phoenicops beata** Hewitson. **Fig. 576, 577.**

Descriptions 100 new Hesperidae, p. 22, 1867.

♂. ABOVE. Forewing rich orange-brown: a series of four large spots forming an interrupted band from subcostal to vein 1a just before tornus, pale yellow, hyaline and irregularly margined dark brown: first spot in end of cell and large: second in area 3 and smaller: third in area 2, the largest: fourth in area 1a, the smallest: a pair of variable postcellular spots in areas 4 and 5, dark brown, with upper one often and lower one sometimes centred pale yellow, hyaline: an obscure spot in area 1a at half, brown: cilia brown, at tornus dull orange. Hindwing rich orange-brown: an irregular variable obscure spot in cell, and another in area 1a at half, dull brown: a series of irregular variable obscure discal spots, dull brown: cilia dull orange.

BENEATH. Forewing dark brown with dorsum dull yellow: hyaline spots as above. Hindwing dark brown with dorsum obscurely orange-brown: hyaline spots as above.

♀. ABOVE. Forewing rich brown: band of spots as in male but more confluent and white, hyaline: a short streak between cell spot and costa, dull yellow: area 1a sometimes obscurely suffused orange-brown, and then showing the brown spot at half as in male: rarely faint traces of the postcellular spots as in male: cilia brown, at tornus dull orange. Hindwing rich brown: spots as in male but extended and obscured: cilia pale yellow.

BENEATH as in male: hyaline spots as above.

LOC. Kuranda 2 3 4 5 8. Herberton 12. Mackay. Brisbane 1 3 9 10. Richmond R. 1.2,10 Illawarra. 20♂ 13♀.

We have one female from Kuranda in which the hyaline spots of forewing have entirely coalesced forming an uninterrupted band, and others showing a tendency in the same direction. Males from the same locality sometimes have the cell spot, the spot in area 1a at half, and the discal spots in areas 2 and 3 of hindwing, centred pale yellow, hyaline. One female, also from Kuranda, shows the cell spot and the discal spot of area 2 of hindwing, centred white, hyaline.

327. **Phoenicops denitza** Hewitson. **Fig. 573, 579.**

Descriptions 100 new Hesperidae, p. 22, 1867.

♂. ABOVE. Forewing orange-brown with veins outlined blue-grey: a large ovoid spot in cell, pale yellow, hyaline: a small discal spot in upper edge of area 1a, a large one in area 2 and a moderate one in area 3, pale yellow, hyaline: a pair of variable postcellular spots in areas 5 and 6, with sometimes a minute one in upper edge of area 4, pale yellow, hyaline: all hyaline spots irregularly margined brown-black: an irregular spot in area 1a at half, brown: cilia dull orange. Hindwing orange-brown with veins outlined blue-grey: a spot in cell and a spot in area 1a at half, brown: a series of irregular discal spots, brown: cilia dull orange.

BENEATH. Forewing orange-brown: terminal half suffused purplish: spots as above. Hindwing orange-brown and suffused purplish except at base: spots as above with cell spot often darker.

Narrabeen N.S.W. Dec 1921 ♂ G.A.W.

♀. ABOVE. Forewing orange-brown irregularly obscured with brown: cell spot and discal spots as in male, but larger and white, hyaline: postcellular spots as in male but larger, and that in area 4 usually present, white, hyaline: a long streak between cell spot and costa, dull yellow: cilia brown with tips dull orange. Hindwing orange-brown irregularly obscured with brown and with veins outlined blue-grey: a spot in cell and sometimes a spot in area 1a at half, orange-brown: a series of large obscure subterminal spots, orange-brown: cilia brown with tips dull orange.

BENEATH. Forewing dull brown: base, apex and dorsum obscurely orange-brown: spots as above. Hindwing dull brown: costa at base and dorsum, orange-brown: a large spot in cell and a smaller one in area 1a at half, brown-black: a series of irregular obscure discal spots, brown.

LOC. Cape York 12. Cardwell. Townsville 11. Mackay 4. Rockhampton. Gayndah. Brisbane 2 3 4 9. 9♂ 5♀.

Genus EXOMETOECA Meyrick.

Proceedings Linnean Society N. S. Wales 1887, p. 833.

Antennae more than half the length of costa: club stout, abrupt and hooked, with apiculus short. Palpi with third joint long and porrect. Eyes brown. Hind tibiae slightly fringed in male. Forewing with costa straight, apex acute and termen nearly straight: cell less than twothirds the length of costa: vein 12 reaching costa just before end of cell: vein 5 nearer to vein 6 than to vein 4: male without a costal fold. Hindwing with termen rounded: vein 5 present.

TYPE. *Exometoeca nycteris* Meyrick.

Readily distinguished from the other genera of the subfamily by the palpi and the small size. The presence of vein 5 in the hindwing, and the position in repose (described by Meyrick) place it in the *Hesperinae*.

328. **Exometoeca nycteris** Meyrick **Fig. 589, 887, 888.**

Proceedings Linnean Society N. S. Wales 1887, p. 833.

♂. ABOVE. Forewing dull silky-brown: a small double spot in cell, brown: three transverse subapical dots, white, hyaline, margined brown: a series of small faint discal spots, brown, those in areas 2 and 3, centred white, hyaline: a small discal spot in area 1a, and a small spot in area 1a at half, brown: cilia brown. Hindwing dull brown with apex broadly brown: a small spot in cell, and another in area 1a at half, brown: a series of small discal spots, brown: cilia brown.

BENEATH. Forewing pale brown with dorsum broadly dull yellow-brown: cell spot as above: an obscure broad discal band, brown with hyaline spots as above. Hindwing dull ashy-brown: spots as above.

♀. ABOVE. Forewing as in male: subapical dots larger and confluent: cell spots and discal spots in area 1a sometimes centred white, hyaline. Hindwing as in male.

BENEATH as in male: hyaline spots of forewing as above.

LOC. Albany 12. 3♂ 3♀.

Genus NETROCORYNE Felder.

Reise Novara Lepidoptera, p. 507, 1867.

Antennae more than half the length of costa: club stout, abrupt and hooked, with apiculus short and slender (**Fig. AS 4**). Palpi with third joint moderate and porrect. Eyes black. Hind tibiae moderately fringed in both sexes. Forewing with costa nearly straight, apex truncate, and termen slightly sinuate: cell nearly twothirds the length of costa: vein 12 reaching costa just before end of cell: vein 5 slightly nearer to vein 6 than to vein 4: male with a narrow costal fold. Hindwing with termen roughly quadrate: vein 5 only slightly indicated by a fold of the membrane. (**Fig. ATa**).

TYPE. *Netrocoryne repanda* Felder.

FOODPLANT. *Callicoma. Eugenia. Elaeocarpus.*

At once distinguished by the palpi and by the absence of a tubular vein in the hindwing.

329. **Netrocoryne repanda** Felder. **Fig. 723.**

Reise Novara Lepidoptera, p. 507, pl. 70, f. 10, 1867.

♂. Above. Forewing silky brown: a large quadrate spot in cell, and three elongate transverse subapical spots, white, hyaline, margined brown-black: a quadrate discal spot in area 2, a smaller one in area 3, and rarely a minute one in upper edge of area 1a, white, hyaline, margined brown-black: an irregular narrow obscure discal band from costa at fourfifths to about vein 1a, dark brown: cilia brown-black: costa with a very narrow fold. Hindwing silky brown: a round clear spot in upper apex of cell, white, hyaline, margined brown-black: a waved band of discal spots, dark brown: cilia brown-black.

Beneath. Forewing pale silky brown: hyaline spots as above but dark margins absent: a short streak between cell spot and costa, pale yellow. Hindwing pale silky brown: a tornal streak brown-black: cell spot and discal band as above.

♀. Above. Forewing as in male: hyaline spots larger: a small discal spot in upper edge, and often another in lower edge of area 1a, white, hyaline, margined brown-black: a streak between cell spot and costa, pale yellow: costal fold absent. Hindwing as in male.

Beneath. Forewing pale silky brown: hyaline spots as above, but with dark margins absent: a streak between cell spot and costa, pale yellow. Hindwing as in male.

Loc. Kuranda 2 10 12. Herberton 1 12. Mackay 1 2. Brisbane. Richmond R. 5.9.10 Bellingen 11. Sydney 1 11 12. Blue Mts. 1. 24♂ 23♀.
3 [illegible] (W.D.F.)

Like the butterflies of the genus *Phoenicops*, northern examples of this species show a tendency of the hyaline spots of forewing to extend and coalesce.

Genus **TAGIADES** Hubner.

Verzeichniss bekannter Schmetterlinge, p. 108, 1816.

Antennae more than half the length of costa: club slender, gradual and hooked, with apiculus short (**Fig. AS 5**). Palpi with third joint minute and porrect. Eyes black. Hind tibiae slightly fringed in both sexes. Forewing with costa slightly arched, apex subacute and termen slightly convex: cell less than twothirds the length of costa: vein 12 reaching costa before end of cell: vein 5 slightly nearer to vein 6 than to vein 4: male without a costal fold. Hindwing with termen evenly rounded: vein 5 only faintly indicated by a fold of the membrane.

Type. *Tagiades japetus* Cramer, from Amboina.

330. **Tagiades japetus** Cramer. (Amboina).

330a. **T. japetus gamelia** Miskin. **Fig. 724.**

Proceedings Royal Society Queensland 1889, p. 146.

♂. Above. Forewing brown-black: a pair of small spots in end of cell, white, hyaline: a small postcellular spot in upper edge of area 2, and another in area 3, white, hyaline: a curved series of five subapical dots in areas 4 to 8, with sometimes a minute one in area 9, white, hyaline: traces of a faint discal band, whitish: cilia brown-black. Hindwing with costa, apex and basal twofifths, brown-black: dorsum and terminal threefifths, white: a quadrate subapical spot in area 6 and a slightly larger one in area 4-5, black: cilia white, at apex brown-black.

Beneath. Forewing as above: hyaline spots slightly larger: discal band much clearer, showing a large cloudy spot in area 1a, and sometimes large faint spots in areas 2 and 3, whitish. Hindwing white: costa and apex broadly brown-black: subapical spots as above, but slightly smaller: a line on termen at vein 2 and another at vein 3, black.

♀. Above. Forewing as in male, but termen slightly more convex: hyaline spots sometimes slightly larger, and the pair in end of cell sometimes narrowly coalescing. Hindwing as in male.

Beneath as in male.

Loc. Cape York 1 2 3 4 5. Prince of Wales Is. 5 6 7. Banks Is. 2 3. Darnley Is. 4 5 6. Claudie R. 2 3. 61♂ 32♀.

We have several examples from Darnley Is., which show black dots on termen of hindwing at each vein.

331. **Tagiades neira** Ploetz. Fig. 780.

Berliner Entomologische Zeitung 1885, p. 230.

♂. Above. Forewing black: a pair of small spots in end of cell, and a minute subcostal spot above end of cell, white, hyaline: a small postcellular spot in upper edge of area 2, and another in area 3, white, hyaline: a curved series of five subapical dots in areas 4 to 8, white, hyaline: traces of a faint discal band, whitish: cilia black. Hindwing with costa, apex and basal third, black: termen broadly and produced slightly along veins, black: dorsum and central area, white: a quadrate subapical spot in area 6, and a larger one in area 4-5 and quite free of black margin, black: cilia white, at apex black.

Beneath. Forewing as above: hyaline spots slightly larger: discal band much clearer with a large cloudy spot in area 1a, whitish. Hindwing white: costa, apex and termen, broadly black: subapical spots well free of the black margin.

Loc. Darnley Is. 5. 1♂.

Our single example agrees closely with some of our specimens of *T. neira* from the Aru Is.: this species belongs to the group typified by *T atticus.*

Subfamily **EUSCHEMONINAE.**

Larva. Stout and short: head large and prominent: body smooth and cylindrical: in shape very similar to the larvae of *P. beata* and *N. repanda.* Feeds by night, and shelters during the day in a folded leaf of the foodplant.

Pupa. Stout and smooth: head rounded: tail pointed: in shape and appearance very similar to that of *P. beata.* Fastened by the tail within the shelter of a folded leaf.

Imago. Of robust build and large size. When in a state of complete repose the butterflies rest with their wings extended flat. Forewing with costa one and a half times the length of termen: vein 5 arising from cell nearer to vein 6 than to vein 4. Hindwing with termen rounded: vein 5 present as a tubular vein: male with sexmark beneath.

Range. The only known species is confined to Australia.

This subfamily differs from all other butterflies in the possession of a frenulum. This has led many entomologists to exclude it from the *Rhopalocera,* and assign it to the *Heterocera.* Against this one important structural point may be placed the characters of the larva, the pupa, and the antennae, as well as the method of flight. These all indicate close affinity with the *Hesperinae.* Those who have seen the larva and pupa, and the insect itself upon the wing, regard it as a butterfly, and we have no hesitation in including it as an aberrant subfamily of the *Hesperidae.*

Genus **EUSCHEMON** Doubleday.

Stokes' Australia, Appendix, p. 513, 1846.

Antennae much more than twothirds the length of costa: club long and gradual, with apiculus very long (Fig. AS 6). Palpi with third joint short, bluntly conical and porrect. Eyes black. Hind tibiae with a slight fringe of hairs in both sexes. Forewing with costa nearly straight, apex acute and termen slightly convex: cell not quite twothirds the length of costa: vein 12 reaching costa at end of cell: vein 5 slightly nearer to vein 6 than to vein 4. Hindwing with termen rounded: vein 5 present as a tubular vein: male with a sexmark along vein 1a, beneath.

Type. *Euschemon rafflesia* Macleay.

332. **Euschemon rafflesia** Macleay. **Fig. 590, 591**

King's Survey Australia, ii, Appendix, p. 463, 1827.

♂. ABOVE. Forewing black: a spot in cell, yellow, hyaline: a large discal spot in area 2, a small one in base of area 3, and a very small one in upper edge of area 1a, yellow, hyaline: an irregular, often incomplete obscure subapical and subterminal band, greenish white: cilia black, with tips in centre of area 1a, often narrowly white. Hindwing black: a very large ovoid spot in cell and extending into area 1a, yellow, hyaline: a short band of three discal spots, yellow, hyaline, first sinuate in upper edge of area 1a, second largest in area 2, third elongate and almost touching cell spot, in area 3: cilia black with tips in centre of area 1a, often narrowly white. Palpi black: anal tuft of abdomen, scarlet.

BENEATH. Forewing black: hyaline spots as above: a narrow subcostal band and a variable, broad, sometimes incomplete, subapical and subterminal band, greenish white. Hindwing black: hyaline spots as above: a variable subcostal, subterminal, and dorsal band, greenish white: a sexmark of specialized scales along vein 1a, brown. Palpi and terminal half of abdomen, scarlet.

♀. ABOVE as in male: termen more convex: subapical and subterminal band often broader.

BENEATH as in male: submarginal bands broader: sexmark absent.

LOC. Kuranda 3 4 5 6 7 9. Brisbane 2. Richmond R. 1 2 3. 21♂ 13♀. Port Macquarie 3.4/1918

Examples from our most northern locality have the hyaline spots of forewing distinctly larger, the greenish bands beneath broader (in one female the whole of the black areas of hindwing, except narrow margins, are greenish white), and the white tips of cilia absent.

In Proceedings Linnean Society N. S. Wales 1891, p. 30, Olliff described a variety of this species as *E. albo-ornatus*: we have two examples of this from the Richmond R. (January): the hyaline spots are white instead of yellow.

[illegible]

[illegible]

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NOTES UPON COLLECTING AND COLLECTIONS.

The following notes of methods of catching, handling, storing and arranging butterflies, involve the repetition of much information already known to collectors, but will be of value to beginners. They are methods we have ourselves used and found successful.

In northern Australia with its semitropical climate, butterflies are most abundant shortly after the close of the rainy season, but a number of species may be taken on the wing every month of the year. As we go south the season shortens: in Sydney the only months, in which it is difficult to find any butterflies, are June and July: in Melbourne none are to be taken in May, June, July and August: in Tasmania their season is still more restricted, lasting only from October to April. We are writing of average years, but seasonal variations hasten or retard the times of appearance: an occasional hibernating specimen may be tempted out in the winter months by mild weather and sunshine, even in the south of Tasmania.

A large number of species appear on the wing for a few months only of each year: others have two broods with a consequently longer season: some few have successional broods, and in some favoured localities in the far north may be taken every month of the year.

The morning is the best time of day to find butterflies on the wing: as soon as the sun begins to give appreciable warmth and on to noon or a little later, they are at their best. As far as southern Australia is concerned very few species fly freely after three in the afternoon. Fine calm bright days are the best, high winds and dull cloudy weather causing most butterflies to take shelter: but a dull day is always preferable to a windy one.

Some species are found in the forest country only, others in the scrub, and others prefer the grassy plains. Some few frequent damp wooded gullies, but a much greater number are to be found on the summits and slopes of the hills. Some are taken at sealevel and others never below 5000 ft. In thick scrub country the roads and paths and small clearings are the best hunting grounds: in the north flowering trees provide great attractions for many butterflies, and prove a veritable treasury to the collector. Many butterflies are only to be found in close proximity to the foodplants of their larvae, but others seem to roam far and wide. Some are very local in their habits being found season after season in the one gully or on the one hillside or summit, in spite of the fact that their foodplant occurs in many adjacent spots. Some fly round the tree tops and rarely come down within reach of the net, while others flit along close to the ground. Wherever vegetation is met with some butterflies are taken, and in the most rocky and barren spots they are not altogether absent.

The great majority of the Australian butterflies are confined to the coastal districts and the mountain ranges. Not more than forty species have yet been recorded farther inland than the spurs of the main divide: we know of no Australian butterfly that has not been taken within a hundred miles of the coast.

COLLECTING APPARATUS AND HOW TO USE IT.

The principal tools needed for collecting butterflies are a net, two killing bottles, a cork lined pocket box with a dozen or two entomological pins in one corner, and a small supply of glass-bottomed pill boxes.

Net. This can be made in many different styles, ranging from a length of bush cane or fencing wire looped and bound to the end of a stick, to the folding pocket net with telescopic handle. A home-made net is often quite as effective as the most expensive, if it be borne in mind that the two points to aim at are a maximum of strength and a minimum of weight. A simple strong and handy net can be made with little trouble from a metal rod and an ordinary brass ferule. Bend the rod into a ring, and turn back the two ends and plug and solder them into the inner ferule: then fix the outer ferule on the end of the net stick or handle. The diameter of the ring should not be less than twelve inches, and for general collecting the handle not more than four feet long. The net bag should be made of green muslin, mosquito net or other soft and thin material, and should be joined to the net ring by a strengthening binding of calico. The bag should be long enough for the side of the ring to close its lower half when the ring is held a little past the vertical position; for the twelve inch ring it should be nearly two feet in depth, tapering from the twelve inch diameter at the ring to a six inch bottom with well rounded corners.

The actual netting of the butterflies and their transference to the killing bottle can only be learnt by experiment; one half hour's practice is better than the most careful and minute instructions. A short quick stroke is needed, with a half turn of the wrist to close the bag when the butterfly is safely inside. A long swinging stroke gives the insect plenty of time to escape, while the short sharp stroke can in the event of a miss be quickly repeated.

The comic-paper caricature of the butterfly "maniac" running down his prey is just as false as the vulgar belief that the butterfly is killed by the transfixing pin. Patient watching and cautious stalking secure a great many more specimens than the most vigorous of "sprinting": the condition of a butterfly left to die upon the pin would disgust the crudest of collectors.

Some butterflies are fond of settling on leaf or twig, and can be approached cautiously and netted more easily from that position than when on the wing. Others delight in settling on bare path or rock and are more difficult to secure: our plan with these is to approach very slowly to within striking distance, drop the net smartly over the resting butterfly, keep the ring tightly against the ground or rock, raise the bag, and, as the captive flies up to the top, gather the lower portion of the net bag into the left hand ready for the insertion of the killing bottle.

Killing bottle. We recommend an eight-oz. wide mouthed bottle holding small pieces of cyanide of potassium embedded in plaster of paris, and with a circle of soft cloth or blotting paper gummed to the surface of the plaster. These can be obtained, ready charged, from almost any chemist, and as the cyanide is a very active and dangerous poison, it is not wise for a beginner to try to charge his killing bottles himself.

When using the bottle in the field we prefer a stout well fitting cork to a ground glass stopper: a string can then attach the cork to the neck of the bottle, and the danger of mislaying the stopper while bottling the netted butterfly is avoided.

The fumes of hydrocyanic acid gas given off by the bottle will stupify the insect in a few moments, and it should at once be emptied into a second charged bottle, to make ready the first for a new capture: when stupified a number may be kept in the one bottle, but to put a living and fluttering butterfly in with them would mean damage to all. It is well to have a thick pad of cottonwool upon the surface of the plaster in the second bottle: after a quarter of an hour the butterfly will be dead and must then be carefully pinned and transferred to the cork lined pocket box: if brought home in the bottle the jolting received is almost sure to damage the specimen.

When the killing bottle becomes weak leave it uncorked for half an hour in a damp atmosphere: the moisture absorbed will release the fumes and make the bottle fit for further use.

Some collectors discard the killing bottle, and practice instead the quicker but clumsier method of killing their captures by sharply pinching the thorax from beneath. This is unavoidable when the butterfly captured is too big for the poison bottle carried, but is only excusable in that case: however carefully it is done the legs are always liable to damage, and the thorax will often be distorted, making the successful setting of the butterfly well nigh impossible.

Pocket Box. This may be made of zinc or wood. Zinc is preferable as the cork may then be kept damp. With a damp box the butterflies are prevented from drying too quickly. By pinning through the side of the thorax beneath the wings, four or five butterflies can often be held by the one pin and the space in the box economised.

If the butterflies are carried for long in the poison bottle they become rubbed and spoilt: fifteen minutes should kill the strongest of them, and then the sooner they are pinned and in the pocket box the better: first see that the wings are folded over the back, leaving the undersurface only visible. It is difficult to prevent some butterflies reversing their wings in the killing bottle, but a little patience with forceps and pin will turn them back again

Glassbottomed Boxes. These may be had in nests of three or four, and may be carried loose in the pocket, or better in a collecting box made to hold a number of the nests. A specially large and wide inside coat pocket is handy for receiving the filled boxes. They are somewhat fragile, and are only useful for the smaller of the butterflies (and for moths), but for these they save much time and trouble in the field, and bring the specimens home alive in the very best condition. Transferred from the net to the pillbox instead of to the bottle, the captures can be at once examined, and damaged or undesired specimens can be liberated. In using these pillboxes it must not be forgotten that an unusually hot day, or exposure of the filled boxes to the sun, may kill the butterfly in the box, and it will then be rubbed and spoilt just as surely as if carried too long in the killing bottle.

When collecting small butterflies in glassbottomed boxes our method is to bring them home alive, and to use several bottles for the killing. As fast as each is stupified it is emptied into one stock poison bottle, and all the insects are left in that bottle for from 24 to 36 hours. The reason of this delay is that within a very short time after death the muscles of the wings grow too stiff for setting. A damp atmosphere such as that of a damp box will loosen the muscles in a few hours, but the cyanide bottle will do it quite as effectually with no danger from mould and with no moisture to clog the fine hairs of the specimens. The time required for the loosening effect of the poison fumes is not constant but varies from 24 to 36 hours. It can easily be gauged by lifting a butterfly from the bottle by one leg: if the weight of the insect straightens the leg the muscles are loose; if it fail to do so more time in the bottle is needed. The loose condition lasts for several hours, but when once it has passed and permanent rigidity has set in, the damp relaxing box must be brought into use before setting can be done. The setting of insects while just a little too stiff is, we are sure, the factor mainly responsible for the poor appearance and damaged condition of set specimens received from many collectors. Twenty butterflies in proper condition can be more easily and quickly set than half a dozen that are not quite ready. Special care in this connection is amply repaid by the consequent ease and pleasure of that otherwise tedious process, and by the improved appearance of the set butterflies.

PREPARING THE CAPTURES FOR THE COLLECTION.

Having caught the butterflies, brought them home, and killed them, they require to be set, dried and labelled before they can be placed in the storebox or cabinet.

The placing of the butterflies upon the setting boards entails a good deal of the labour and difficulty, but at the same time not a little of the pleasure and the education of the collector. Some practice is needed before specimens can be handled without rubbing scales from the wings or otherwise damaging them, but an expert touch can always be acquired with perseverance. Upon the neatness and uniformity of the setting and upon the labelling, depends very largely the value of the collection.

No matter how expert or careful a collector may be, he cannot set his specimens quickly and well if the muscles of the wings are not sufficiently relaxed. If killed in the field and at once pinned in the damp box, they will be in good condition for placing on the boards the same evening. If brought home alive they may be killed one by one as the setting progresses; this however requires considerable judgment and care, as the killing bottles vary in strength and the butterflies in vitality: it is not only annoying but deplorable to find a specimen showing signs of returning life after it has been placed on the setting board. The better plan is to leave the insects in the killing bottle till next evening as described in a previous paragraph.

The boards used for setting are covered with a cork material, and have a central groove half to threequarter inch deep, and wide enough to take the body and legs of the specimen comfortably. The entomological pins most in favour and most easily obtainable are those of Kirby Beard; we recommend size 5 or size 7 for the smallest butterflies, No4 for those of medium size, and No3 and No2 for the largest species. No16 is the size we use for pinning down the covering papers to the setting boards.

The pinning of the butterfly is worthy of very careful attention, for upon its accuracy depends the success of the setting; if badly pinned it is quite impossible to set a specimen to the best advantage.

Pinning. Rest the insect between the tips of the finger and thumb of the left hand, with the wings above and the head pointing outwards. Take the pin in the forceps and, holding it a little beyond the vertical position, insert the point exactly in the centre of the thorax and press it through in such a direction that the point emerges between the second and third pair of legs. Should the point not come through in the spot wanted, withdraw it a little and again press it through, but be careful to use the same point of entry. Place the pinned insect in the groove of the board at such an angle that the head is just a shade higher than the thorax, and at such a height on the pin that the bases of the wings are just clear of the surface of the setting board.

There are several methods of setting or spreading the wings. We use the bristle method for small moths and have tried the silk winding method, but we find the following plan the most effective, and suitable alike for the strongest and largest and the weakest and smallest of the butterflies.

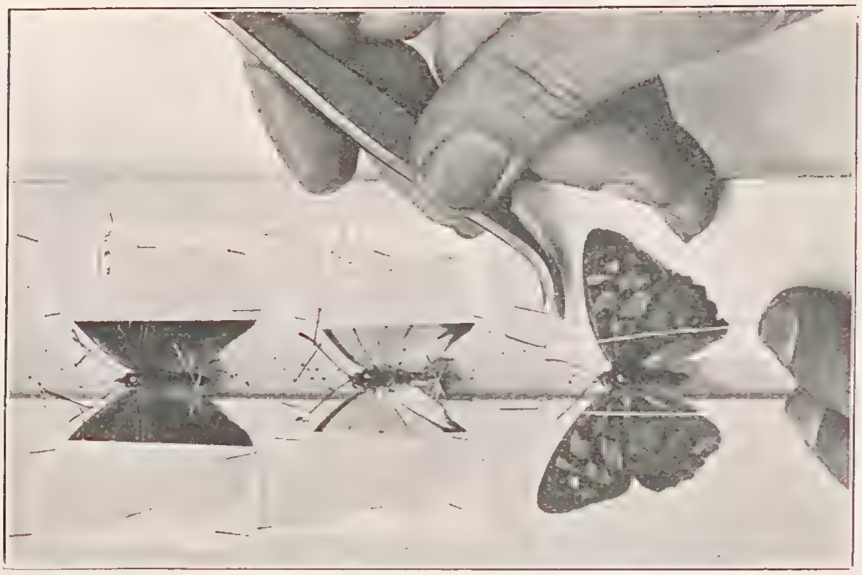
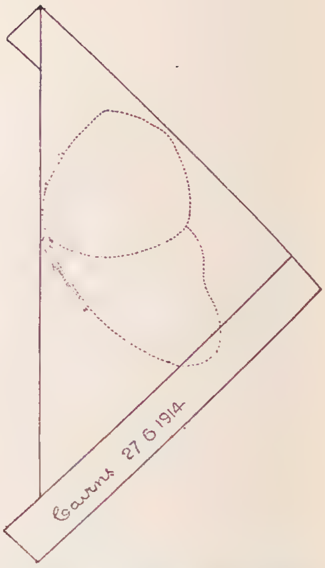


Figure illustrating method of setting butterflies.



Paper envelope for storing butterflies.

Setting. Tie two short lengths of ordinary sewing cotton to two No5 pins close to the points. Insert these pins in the board a little in front of the butterfly, one close to each side of the groove. Guide the cotton between the wings and with it press them flat against the boards, holding the cottons against the board below the insect with the first and third finger of the left hand. Take a fine pin (we use No. 16) in the forceps and, first easing the lefthand cotton between the left thumb and the forefinger, with the point of the pin draw the forewing forward till the dorsum of the wing is at an exact right angle with the groove of the setting board. Hold it there with the cotton, and in the same way draw forward the hindwing till its costa is hidden under the dorsum of the forewing. Take a small oblong of semi-transparent paper (tracing paper or vegetable parchment paper answers well), place it across both wings and pin it down firmly to the board with small pins. Treat the two right hand wings in similar manner. Then use the pin in the forceps to place the antennae in their correct positions—see plates—and hold them there with cross pins or with tiny squares of paper. Place two cross pins beneath and two above the abdomen, holding it in the centre of the groove just level with the surface of the setting board.

Careless collectors set the wings only, and allow the antennae and abdomen to dry as they please, but the appearance of the specimen always suffers. Some prefer a long needle set in a wooden handle with which to draw forward the wings: this entails taking up and setting down the forceps and the needle quite a number of times during the setting of each specimen: our method avoids this, is easily learnt, and saves much time and trouble. The oblongs of paper should be cut large enough to fully cover both wings. The use of transparent paper allows of the placing of the attaching pins close to the edges of the wings without any danger of piercing them: should a wing slip back out of position it is more readily noticed than when opaque paper or card is used.

Drying. The humidity of the atmosphere and the size of the butterfly must determine the length of time the insect should remain on the setting board. A few days is often enough, a week is usually quite sufficient, but in damp weather several weeks may be needed. By artificial heat specimens may be dried in a few hours, but great care is needed: too great or too sudden heat makes the antennae and legs brittle and will even curl the papers and the wings. An ideal plan is to expose the board in the sunshine and breeze, if it be possible to keep careful watch over it. It is always safe to take the butterfly from the boards and put it in the storebox or cabinet drawer as soon as the abdomen becomes rigid; this can be ascertained by careful pressure with a pin after the crosspins have been removed.

Labelling. The importance of the careful and accurate labelling of each butterfly handled cannot be overestimated. A small square of white paper or card with the place and date of capture is essential. The label should be written immediately the butterfly is set, pinned beside it on the board, and placed upon its pin beneath it when it is taken off the board. Butterflies stored in envelopes should have the date and locality pencilled upon each envelope; they should be relaxed in their envelopes and the label written for each as it is set.

[illegible]

[illegible]

Unless every specimen is thus labelled the value of the collection for scientific purposes is sadly discounted: the label may be almost said to be of equal value with the specimen which it serves to authenticate. A wilfully misleading label giving false locality or date is an unforgivable sin against science: no label at all is a lost opportunity to add our mite to the sum of scientific knowledge.

When dealing with many specimens from any one locality, printed labels with space for written date of capture are neat and legible and save much time. They should be printed in clear but very small type, so that the label may not exceed in size the smallest of the butterflies.

Relaxing. When it is not possible to set the butterflies within a day or so of capture: when they have been received from other collectors unset or badly set: or when they have been stored in paper envelopes (perhaps for years), it is necessary to relax them before they can be placed upon the setting boards. There are many ways of doing this and none of them are altogether easy. The difficulty is to keep them damp long enough for the muscles of the wings to thoroughly relax, and yet to avoid the damp spoiling them, or mould making its appearance.

They may be placed under a bell glass resting on damp sand: in a corklined damp box: between sheets of damp blotting paper in a tightly closed tin box: or resting on a small pedestal in a jar partially filled with water and closely stoppered. The relaxing receptacle should be quite air tight, or failing that use should be made of an outside wrapping of several thicknesses of paper or oiled cloth to retain the moisture. None but boiled water should be used for the damping, and no specimen should be allowed to touch a wet surface.

Butterflies will sometimes relax well in less than twentyfour hours, but at other times they will need several days in the box: in warm weather they relax better than in cold, but there is then greater danger of mould. When relaxed they are placed on the setting board in much the same way as freshly killed specimens. Sometimes it may be necessary to hold the wing in position with a fine pin inserted just behind one of the stronger veins, but this should be taken out when the covering paper is securely pinned down. Usually a few cross pins and some little ingenuity is required to set the head in correct position to allow of spreading the antennae uniformly.

Some entomologists consider fortyeight hours on the boards sufficient for relaxed butterflies, others think a fortnight none too long: much depends upon whether the moisture absorbed in the relaxing box is dried out by careful exposure to fire or sun or allowed to gradually evaporate in the drying case. If taken off the boards too soon, or if set before thoroughly relaxed, the wings are liable, a few weeks later, to spring upwards a little and spoil the appearance. Painting the junction of wings and thorax beneath with shellac dissolved in spirit is said to prevent the springing back of the wings. In our experience this is only a partial success and should be resorted to only when an obstinate specimen still springs after being relaxed more than once.

During the last year or two a patent relaxing tin has been much advertised and greatly recommended. Chemical fumes and bruised laurel leaves take the place of the usual moisture, which must on no account be added. Some trials with this tin have been most successful and others for no apparent reason most disappointing. A dozen Hesperids remained in one of these tins for ten months and we set them then quite easily without any further relaxing. This appeared to demonstrate its victory over mould but later experiments were not uniform. Used as a postbox to bring us unset specimens from other States mould has made its appearance within four weeks. Apparently the specimens must be themselves dry when put in the box, and if too many are enclosed the moisture of their bodies will be of itself sufficient to allow mould to get a footing. A mould proof relaxing box would be an inestimable boon to the collector, especially when travelling.

The butterflies having been captured, killed, set and labelled, their storing and arrangement require our attention.

Storing. Some collectors prefer storeboxes to cabinet drawers on account of their smaller cost, the less room occupied, the ease with which the collection can then be packed for removal, and the convenience of introducing a new storebox at any time to an overcrowded portion of the collection. On the other hand the cabinet drawers are safer from insect pests, can be examined and exhibited without the same danger of damage, and can be arranged with much better effect.

Many a collector dreams of the day when he will be able to afford a forty drawer cabinet in which to finally arrange his collection. But in Australia there is little chance of anything like finality for many years to come. We anticipate that more than a few new species and many new races will yet be found, and he will be a poor sort of enthusiast whose collection will not be continually growing in numbers and value. After a good many years of experience, the plan we favour is the adoption of a uniform small six, eight or ten drawer cabinet, so designed and built that it may be placed above, below or alongside its fellow. Thus as cabinet on cabinet is added a solid collective cabinet is formed capable of indefinite expansion for the accommodation of the largest collection. The expense of one such cabinet is comparatively light and that will be all a beginner needs: as the collection grows others can be added one by one, till each family or group of butterflies occupies its own cabinet or cabinets. The constant rearrangement of the growing collection is then made easily possible by the introduction of a new cabinet, and the transfer of specimens to it. Each drawer as it is emptied can then be repapered and rearranged till the whole collection has been handled. The size of the glass topped cabinet drawers we favour are 24″ x 18″ x 2″ and 27″ x 22″ x 2″: the drawers of the larger size show off our semitropical butterflies to the best advantage.

Whether arranged in cabinet drawers or storeboxes the cork lining must first be covered with white paper. In most old collections we still see the rows of butterflies divided by rulings of leadpencil or ink, or sometimes by lengths of blackcotton or silk stretched upon pins. The butterflies of one drawer are seldom of quite uniform size and the divisions have consequently to be of varying widths: this would matter but little if the collection were a stationary one, but the addition of a new species of a differing size entails trouble. The lines of black cotton stretched from head to foot of the drawer are a harbour for any dust or fragments of legs or antennae: the rulings are neater, but are permanent, and necessitate the emptying of the drawer and its repapering before it can be rearranged to include species of new sizes. When the writer in 1890 planned his first cabinet he noticed this difficulty and found a simple and quite satisfactory solution. He had the white paper faint ruled in the usual way and then crossruled: this divided the paper into quarter inch squares, and provided not only the division lines, and those upon which to arrange the rows of butterflies, but also the cross lines upon which to pin the labels. The machine ruling of the paper before the box or drawer is lined saves fully half the labour of the arrangement, and the ruling can be so faint as to be barely noticeable: all that is needed is a little extra care with the lining to get the lines of the paper parallel with the sides of box or drawer.

Arranging. At least four specimens of each species should be kept, in order to show both upper and under surface of each sex. We incline to much longer series, as in almost every species there are to be found variations in markings or colours. A species can best be recognised and studied from a number of examples: wholly wrong conclusions may be arrived at if the characters are taken from a single specimen.

It is usual to place the males at the head and the females at the foot of the series, and it is necessary to group together the different species of each genus. The arrangement of the genera in a subfamily is somewhat a matter of individual opinion and our plan of grouping need not necessarily be followed, though we have so far as our present knowledge allows placed related genera together.

Name labels showing family and subfamily should be placed at the head of each storebox or drawer, and a name label of each genus either at the head of the genus or, with the name of the species and the authority, at the foot of each series.

The butterflies having been arranged, it must not be thought they require no further care. Three foes of the collection have to be guarded against, and to prevent any of these gaining a footing a periodical and careful examination of all drawers and storeboxes is essential.

Insect Pests. Theoretically both cabinet drawers and storeboxes are insect and dust proof: practically very few of them are so: there is often some minute opening through which a tiny larva from an egg deposited on the outside of the drawer can make its way. The cabinet drawers should be made with a bordering chamber hidden by the frame of the glass, in which to place napthalene or other insecticide. This serves as a deterrent to intruding pests, but does not kill them. Even though the drawers be almost air tight pests are sure to make their appearance sooner or later: they can be introduced with specimens from the setting boards or on exchange specimens. The presence of dusty particles beneath a specimen is an indication that it is attacked and it should be treated at once. If of small size it may be pinned to the underside of the cork of the killing bottle and left there for half an hour, or it may be soaked for a few minutes in chloroform or benzine. But the presence of one infected specimen usually means others undetected, and the safer plan is to treat the whole drawer or box. Mites may be destroyed by a liberal dusting of the drawer with powdered napthalene, but this has but little effect on the larvae of *Anthrenus* or *Dermestes*. Small beetles of these two genera are responsible for most of the damage in collections, and one or more of their larvae allowed to remain undisturbed in a cabinet drawer will work sad havoc. Exposure of the affected drawer to heat and light will sometimes bring a larva from its hiding place, and it can then be destroyed, but bisulphide of carbon is the only effective cure.

A quarantine box is a necessity in every collection, and here all exchange specimens and all infected storeboxes or drawers should be treated. Some writers have discouraged the use of bisulphide of carbon on account of its supposed danger: it is certainly very inflammable and the continued inhalation of its disagreeable fumes are no doubt prejudicial. But the fumigation may be carried on out of doors in the daylight where it is quite safe and harmless; and we know of no effective substitute.

The quarantine box or tin should be fitted with a close lid and large enough to hold an opened storebox or a cabinet drawer. Put the opened box or drawer of specimens in the quarantine box face downwards. Pour about a teaspoonful of bisulphide on a wad of cottonwool in one corner of the outer box and close it tightly for about an hour. By that time all insect life will have been destroyed, and after a little airing to remove the clinging odour, the drawer or storebox may be restored to its place in the collection. All the setting boards should be treated in the quarantine box every few months, or pest larvae may find a lodgment in them from which to attack newly set specimens.

A handy substitute for the quarantine box is a tiny porcelain cup, half inch high and half inch diameter, to the base of which an ordinary drawing pin is cemented. This can be partly filled with the bisulphide and fixed in the drawer or storebox and left till emptied by evaporation. A dozen such cups will treat a dozen drawers at once and so much time may be saved: care must be taken that the liquid does not splash over the cup or it will stain the paper: the hole made in the paper by the drawing pin can be hidden under a name label.

Mould. In a warm climate or season the damp relaxing box is liable to produce a crop of mould or mildew which will soon attack and damage the specimens. Nothing but boiled water should be used for the relaxing box, but even with this precaution the continual use of the box is sure to eventually result in a crop of minute fungi; mould spores floating in the air cannot be entirely avoided.

Formalin is one of the best of mould destroyers, but unfortunately it hardens instead of softens the muscles and tissues of the specimens. A ten per cent. solution of carbolic acid is often recommended but this requires great care; the slightest touch will stain the specimen and there is always a danger of the colours being affected, reds changing to dull orange and orange almost to red-brown. Ammonia relaxes well but affects the pink and red colours.

When mould makes its appearance on specimens in the collection, the drawer or storebox should be opened and carefully exposed before a fire till all the moisture has evaporated: the mould can then be dusted off with a camel hair brush. In all such cases a drier and more airy position should be sought for the collection.

A fairly effective mould preventive has lately been discovered in Thymol. The smallest scraping of this in the damp relaxing box will to a large extent prevent the growth of mould. With a relaxing box in constant use the action of the moisture on the Thymol will decompose it, and the released fumes are then unpleasant: at such times the box should be scalded out and new thymol scrapings then added.

Grease. Those families of the moths whose larvae are internal feeders, the Hepialidae, the Cossidae and the Xyloryctidae, are always sure to develop grease sooner or later. The fatty content of the abdomen liquifies instead of hardening and in time penetrates to the surface of the skin in dark spots and patches, and if unchecked will gradually spread to the wings and render them most unsightly. Fortunately the average buterfly is not nearly so liable to this trouble, but *Liphyra brassolis,* and the butterflies of the genus *Catopsilia* are exceptions, and any butterfly left too long in the relaxing box may suffer.

The removal of the grease, while fresh, is not very difficult. The abdomen must be slit from the underside and the contents removed: then either the severed abdomen or the whole of the butterfly must be immersed in some volatile spirit for half a minute only. Benzine, chloroform or ether will do: the spirit dissolves the grease, and while still damp the specimen must be completely buried in powdered magnesia. Magnesia has the power of absorbing the grease, and in about half an hour the butterfly may be lifted out and the magnesia blown from it, any adhering remainder being carefully dusted off with a soft brush.

Specimens thus treated will regain much if not the whole of their first beauty, all traces of the disfiguring grease disappearing. When the abdomen is small and the evidence of grease only slight it may be treated with benzine and magnesia without removing the contents, but there is a danger of the grease reappearing. This treatment sometimes fails with specimens in which the grease has been present for years and dried hard upon the wings: it is then difficult to dissolve with the benzine, and it has usually stained the wings beyond remedy.

Storing in paper envelopes. When on a collecting tour carry a travelling box of setting boards, but failing this the captures can best be stored in triangular paper envelopes placed in a wooden box or a tin. In the subtropics a close fitting *tin* should never be used for this purpose, as the moisture and heat of the atmosphere, and that from the bodies of the insects, will quickly cause decay: a cigar box is then an ideal receptacle and the tobacco aroma keeps the insect pests at a distance.

The envelopes are made by folding an oblong piece of white paper to the size required in the following way. Fold the left hand bottom corner to a little past the centre of the right hand side of the paper; bring down the top square over the folded side, and then fold over the corners and edges. On the outside margin of each envelope pencil the date and the locality of each capture.

Before placing each butterfly in its envelope see that its wings are folded over its back leaving the undersurface only exposed. With each butterfly of the genus *Catopsilia* place a scrap of blotting paper between the wings and the body: this will help to absorb any grease that may later develop.

For the setting of these papered specimens see our hints in the paragraph upon relaxing.

Sending butterflies through the post. If sent in the triangular paper envelopes these may be placed in a small flat tin and posted without any further packing. With set specimens greater care is needed. They should be firmly pinned in a small corklined box: the heavier-bodied specimens should have a small wad of cotton wool beneath the abdomen and should then be crosspinned as when setting. With large butterflies a stout pin fixed in the cork close against the base of costa of each wing avoids the danger of the insect swinging on its pin. With a little care and ingenuity the wings of set butterflies may be overlapped in the postbox, and a large number packed in a very small space.

This postbox must now be enclosed in a tin large enough to give a space of not less than one inch all round. This space between the outer and inner package should be filled with woodwool, shavings or crushed paper to take the jars received in transit.

A tin is preferable to a box for the outer package as it will stand rough usage that would crush a wooden box. With this method of packing the most fragile of set butterflies can travel any distance with very slight risk of injury.

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Australian genera are printed in ordinary type with initial capital.
Australian species and subspecies are printed in ordinary type without initial capital.
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Index numbers are placed against each point shown on the map; they begin with Cape York as No. 1, and roughly follow the coastline round the island-continent to Cape York again. Index letters refer to the small inset maps. Localities mentioned for which room could not be found on the map are indicated as follows: 37–39 means between the two points numbered 37 and 39; = 54 means comprised in the district represented by 54; SW. 52 means southwest of 52.

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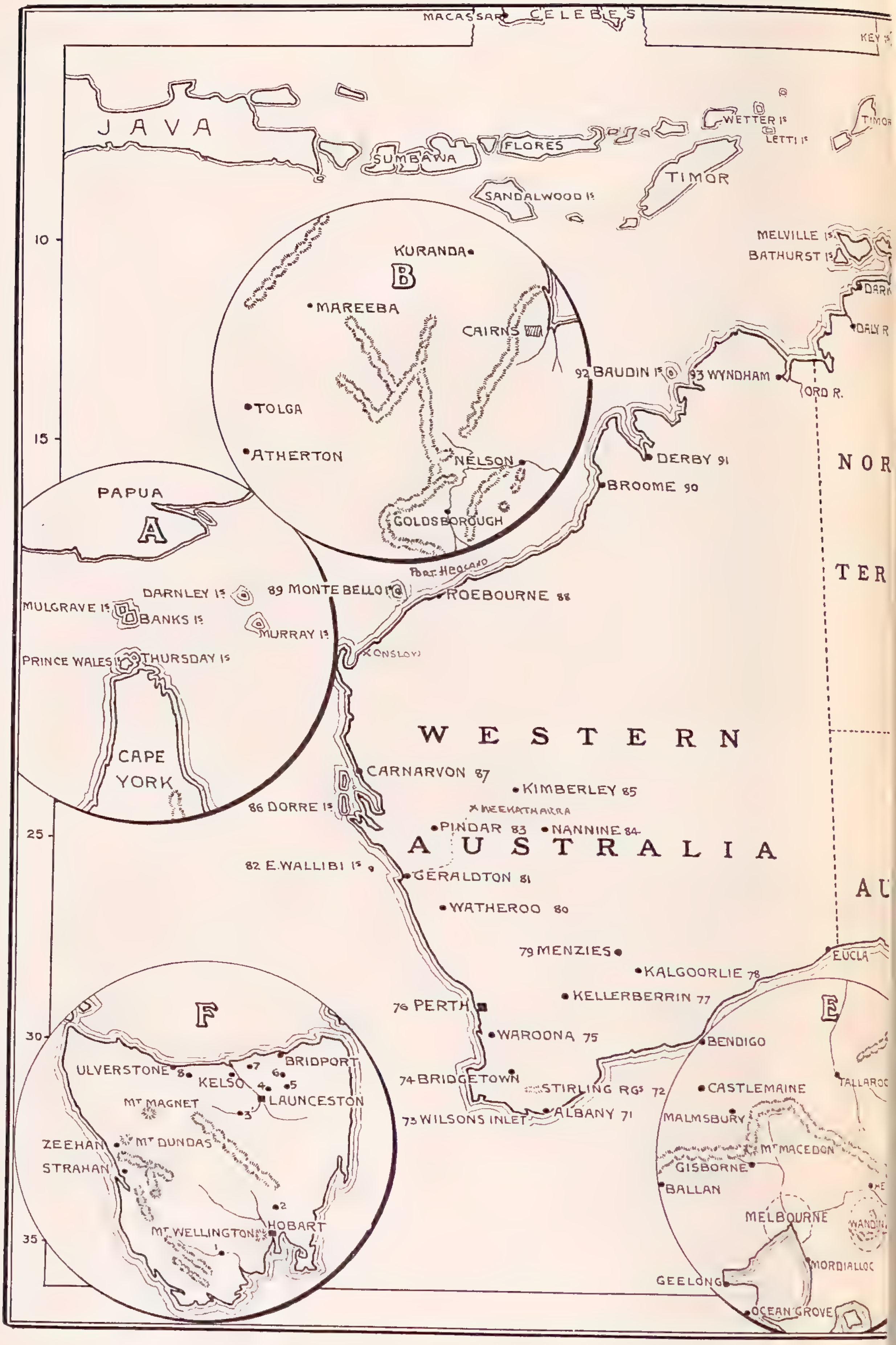
Initials used in locality records.

W.D.F. = W. D. Filmer, Toronto N.S.W.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CELEBES
KEY Is
JAVA
SUMBAWA
FLORES
WETTER Is
LETTI Is
TIMOR
TIMOR
SANDALWOOD Is
MELVILLE Is
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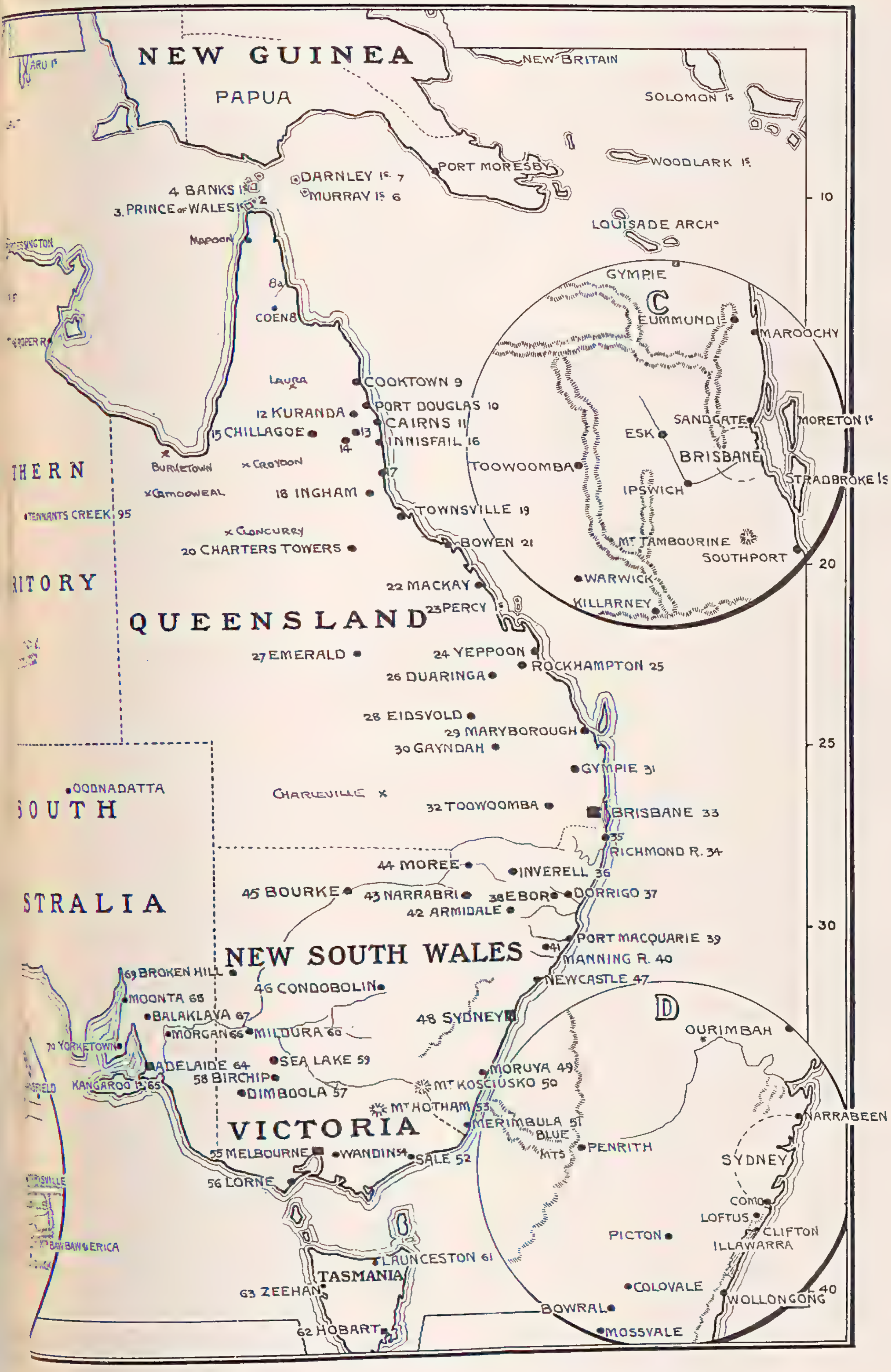
2
HOBART
Mt WELLINGTON
1

NEW GUINEA
QUEENSLAND
NEW SOUTH WALES
VICTORIA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The figures on the right refer to the page in the text where the species is described.
The locality and month are those of the specimen from which the figure was taken.

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3.	♂.	„ *alexis* nov.	Derby		17
4.	♂.	„ *hamata* Macleay	Mackay	April	18
5.	♂.	*Tellervo zoilus* Fabricius	Kuranda	January	19
6.	♂.	*Acraea andromacha* Fabricius	Blue Mts.	April	66
7.	♂.	*Danaida gelanor* nov.	Darnley Is.		17
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18.	♂.	„ *amycus* Miskin (from type in the Queensland Museum).	Cape York		24
19.	♂.	„ *corinna* Macleay	Cooktown	November	24
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36.	♂.	*Pyrameis kershawi* McCoy	Mackay	January	56
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38.	♂.	„ *zelima* Fabricius	Mackay	March	54
39.	♀.	„ *albicincta* Butler	Mackay	March	55
40.	♂.	*Yoma parva* Butler	Cape York	April	57
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*46A.	♀.	„ *guerini f. semperi* Staudinger	Mackay		57
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48.	♂.	*Mynes guerini* Wallace	Cairns	August	56
49.	♂.	*Issoria propinqua* Miskin	Kuranda	March	64
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* 46A. Wrongly marked on plate as male.

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74.	♂.	„ *terminus, f. tira* nov.	Mackay	September	29
75.	♂.	*Tisiphone abeona* Donovan	Sydney	February	46
76.	♂.	„ *abeona* Donovan	Sydney	September	46
77.	♂.	„ *morrisi* Waterhouse	Richmond R.	October	47
78.	♂.	„ *morrisi* Waterhouse	Richmond R.	October	47
79.	♂.	*Hypocysta euphemia* Westwood	Sydney	December	33
80.	♀.	„ *euphemia* Westwood	Sydney	September	33
81.	♂.	„ *euphemia* Westwood	Sydney	September	33
82.	♂.	*Tisiphone rawnsleyi* Miskin	Eumundi		47
83.	♂.	„ *rawnsleyi* Miskin	Eumundi	March	47
84.	♂.	„ *helena* Olliff	Kuranda	February	47
85.	♂.	„ *helena* Olliff	Kuranda	December	47
86.	♂.	*Hypocysta antirius* Butler	Darwin	May	35
87.	♂.	„ *antirius* Butler	Darwin	June	35
88.	♂.	„ *adiante* Hubner	Sydney	October	35
89.	♂.	„ *adiante* Hubner	Sydney	October	35
90.	♂.	*Heteronympha merope* Fabricius	Merimbula	December	37
91.	♂.	„ *merope* Fabricius	Sydney	October	37
92.	♀.	„ *merope* Fabricius	Sydney	November	37
93.	♀.	„ *merope* Fabricius	Sydney	November	37
94.	♂.	„ *duboulayi* Butler	Bridgetown	January	37
95.	♀.	„ *duboulayi* Butler	Bridgetown	January	37
96.	♂.	„ *mirifica* Butler	Sydney	November	38
97.	♀.	„ *mirifica* Butler	Illawarra	April	38
98.	♂.	*Melanitis bankia, f. barnardi* Lucas	Mackay	March	32
99.	♂.	*Heteronympha philerope* Boisduval (aberration).	Victoria		39
100.	♂.	„ *merope,* ab. *suffusa* Skuse	French Is.		37
101.	♀.	„ *merope,* ab. *suffusa* Skuse	Bowral	January	37
102.	♂.	*Tisiphone joanna* Butler (from coloured fig. of type in the British Museum).	Australia		46
103.	♂.	*Heteronympha banksi* Leach	Wandin	March	38
104.	♀.	„ *banksi* Leach	Wandin	March	38
105.	♂.	„ *banksi* Leach	Wandin	March	38
*106.	♂.	„ *solandri* Waterhouse	Mt. Erica	February	39
107.	♀.	„ *solandri* Waterhouse	Mt. Erica	February	39
108.	♂.	„ *solandri* Waterhouse	Mt. Erica	February	39
109.	♂.	„ *paradelpha* Lower	Wandin	February	39
110.	♀.	„ *paradelpha* Lower	Wandin	February	39
111.	♂.	„ *paradelpha* Lower	Wandin		39
112.	♂.	„ *philerope* Boisduval	Gisborne	February	39
113.	♀.	„ *philerope* Boisduval	Gisborne	February	39
114.	♂.	„ *philerope* Boisduval	Gisborne	February	39
115.	♂.	„ *cordace* Hubner	Macedon	February	40
116.	♀.	„ *philerope* Boisduval (aberration).	Gisborne	January	39
117.	♂.	„ *cordace* Hubner	Macedon	December	40
118.	♂.	*Oreixenica orichora* Meyrick	Mt. Kosciusko	January	43
119.	♀.	„ *orichora* Meyrick	Mt. Kosciusko	January	43

* 106. Wrongly marked on plate as female.

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122.	♀.	„ *correeae* Olliff	Mt. Kosciusko	January	43
123.	♀.	„ *correeae* Olliff	Mt. Kosciusko	January	43
124.	♂.	„ *herceus* nov.	Gisborne	March	42
125.	♂.	„ *herceus* nov.	Lorne	March	42
126.	♀.	„ *laranda* nov.	Zeehan	March	42
127.	♂.	*Argynnina tasmanica* Lyell	Zeehan	November	41
128.	♂.	„ *tasmanica* Lyell	Zeehan	November	41
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130.	♂.	„ *cyrila* nov.	Wandin		41
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133.	♂.	„ *elia* nov.	Mt. Dundas	February	36
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139.	♂.	*Oreixenica kershawi* Miskin	Wandin	February	44
140.	♂.	„ *kershawi* Miskin	Wandin	February	44
141.	♂.	*Yphthima arctous* Fabricius	Sydney	February	32
142.	♂.	*Hypocysta pseudirius* Butler	Sydney	March	34
143.	♂.	„ *pseudirius* Butler	Sydney	January	34
144.	♂.	„ *metirius* Butler	Loftus	September	34
145.	♂.	„ *metirius* Butler	Sydney	April	34
146.	♂.	„ *irius* Fabricius	Townsville	September	34
147.	♂.	„ *irius* Fabricius	Kuranda	November	34
148.	♂.	„ *angustata* nov.	Coen	November	34
149.	♂.	„ *angustata* nov.	Coen	October	34
150.	♂.	*Thysonotis serapis* Miskin	Kuranda	December	92
151.	♂.	„ *syrius* Miskin	Cape York	May	92
152.	♀.	„ *syrius* Miskin	Cape York	May	92
153.	♂.	„ *syrius* Miskin	Cape York	May	92
154.	♂.	„ *arinia* Oberthur	Cairns		93
155.	♀.	„ *arinia* Oberthur	Cooktown	November	93
156.	♀.	„ *arinia* Oberthur	Cooktown	December	93
157.	♂.	*Megisba nigra* Miskin	Kuranda	April	74
158.	♂.	*Thysonotis taygetus* Felder	Richmond R.	May	92
159.	♂.	„ *taletum* nov.	Kuranda	December	93
160.	♀.	„ *taygetus* Felder	Mackay	September	92
161.	♀.	„ *taygetus* Felder	Richmond R.	April	92
162.	♂.	*Pepliophorus coelestis* Miskin	Kuranda	October	101
163.	♀.	„ *coelestis* Miskin	Kuranda	November	101
164.	♀.	„ *coelestis* Miskin	Kuranda	May	101
165.	♂.	*Waigeum panaetha* Waterhouse & Lyell (same example as No. 202).	Cape York	March	91
166.	♀.	*Megisba nigra* Miskin	Kuranda	April	74
167.	♂.	„ *nigra* Miskin	Kuranda	June	74
168.	♂.	*Cyaniris tenella* Miskin	Kuranda	June	75
169.	♀.	„ *tenella* Miskin	Kuranda	June	75

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170.	♀.	*Cyaniris tenella* Miskin	Kuranda	June	75
171.	♂.	*Philiris kamerungae* Waterhouse	Kuranda	April	77
172	♀.	*kamerungae* Waterhouse	Kuranda	April	77
173.	♂.	„ *innotatus* Miskin	Cape York	May	76
174.	♀.	„ *innotatus* Miskin	Cape York	May	76
175.	♀.	„ *kurandae* Waterhouse	Kuranda	October	76
176.	♀.	„ *kurandae* Waterhouse	Kuranda	April	76
177.	♂.	„ *kurandae* Waterhouse	Kuranda	April	76
178.	♂.	*Candalides absimilis* Felder	Kuranda	November	79
179.	♂.	„ *margarita* Semper	Cape York	May	79
180.	♂.	„ *helenita* Semper	Kuranda	October	79
181.	♂.	„ *absimilis* Felder	Mackay	February	79
182.	♂.	*Pseudodipsas digglesi* Hewitson	Townsville		84
183.	♀.	*Philiris diana* nov.	Kuranda	April	76
184.	♂.	*Nesolycaena albosericea* Miskin	Stradbroke Is.	October	75
185.	♀.	*Candalides xanthospilos* Hubner	Sydney	November	77
186.	♂.	„ *xanthospilos* Hubner	Sydney	September	77
187.	♀.	„ *absimilis* Felder	Mackay	January	79
188.	♀.	„ *margarita* Semper	Cape York	May	79
189.	♀.	„ *helenita* Semper	Kuranda	December	79
190.	♀.	„ *helenita* Semper	Cairns	November	79
191.	♀.	*Pseudodipsas digglesi* Hewitson	Townsville		84
192.	♂.	*Arhopala wildei* Miskin	Kuranda	August	125
193.	♂.	*Nesolycaena albosericea* Miskin	Expedition Range		75
194.	♂.	*Deudorix agimar* Fruhstorfer (same example as No. 201).	Cape York	March	132
195.	♂.	*Hypolycaena phorbas* Fabricius	Mackay	February	130
196.	♀.	„ *phorbas* Fabricius	Townsville		130
197.	♀.	„ *phorbas* Fabricius	Townsville	January	130
198.	♂.	*Deudorix diovis* Hewitson	Mackay	March	132
199.	♀.	„ *diovis* Hewitson	Kuranda	April	132
200.	♂.	„ *diovis* Hewitson	Kuranda	April	132
201.	♂.	„ *agimar* Fruhstorfer (same example as No. 194).	Cape York	March	132
202.	♂.	*Waigeum panaetha* Waterhouse & Lyell (same example as No. 165).	Cape York	March	91
203.	♂.	*Miletus apelles* Fabricius	Mackay	April	87
204.	♀.	„ *apelles* Fabricius	Mackay	April	87
205.	♂.	„ *apelles* Fabricius	Mackay	March	87
206.	♀.	„ *chrysonotus* Grose-Smith	Mackay	March	90
207.	♀.	„ *chrysonotus* Grose-Smith	Mackay		90
208.	♂.	*Rapala simsoni* Miskin	Mackay	March	133
209.	♀.	„ *simsoni* Miskin	Mackay	March	133
210.	♂.	*Miletus miskini* Waterhouse	Kuranda	September	88
211.	♀.	„ *miskini* Waterhouse	Kuranda	September	88
212.	♀.	„ *miskini* Waterhouse	Kuranda	February	88
213.	♂.	„ *ignita* Leach	Sydney	February	89
214.	♀.	„ *ignita* Leach	Sydney	February	89
215.	♂.	„ *ignita* Leach	Sydney	January	89
216.	♂.	„ *cyane* nov. (same example as No. 259).	Mackay	September	90
217.	♂.	„ *hecalius* Miskin	Sydney	September	87

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219.	♂.	„ *euclides* Miskin	Kuranda	May	88
220.	♀.	„ *euclides* Miskin	Kuranda	May	88
221.	♀.	„ *euclides* Miskin	Cairns	December	88
222.	♂.	„ *narcissus* Fabricius	Thursday Is.		86
223.	♀.	„ *narcissus* Fabricius	Cooktown	October	86
224.	♂.	„ *narcissus* Fabricius	Thursday Is.	May	86
225.	♀.	„ *narcissus* Fabricius	Thursday Is.	March	86
226.	♀.	„ *hecalius* Miskin	Toora	December	87
227.	♀.	„ *hecalius* Miskin	Wandin		87
228.	♂.	„ *delos* nov.	Oakleigh	November	85
229.	♀.	„ *delos* nov.	Oakleigh		85
230.	♂.	„ *delos* nov.	Oakleigh		85
231.	♂.	„ *delicia* ab. *duaringae* Waterhouse	Duaringa		85
232.	♂.	„ *rovena* Druce	Cooktown	October	86
233.	♀.	„ *rovena* Druce	Kuranda	February	86
234.	♂.	„ *rovena* Druce	Mackay		86
235.	♀.	„ *rovena* Druce	Kuranda	December	86
236.	♂.	*Pseudodipsas iole* nov.	Kuranda	November	81
237.	♀.	„ *iole* nov.	Kuranda	October	81
238.	♀.	„ *iole* nov.	Kuranda	November	81
239.	♂.	„ *brisbanensis* Miskin	Pambula	December	82
240.	♂.	„ *brisbanensis* Miskin	Sydney	October	82
241.	♀.	„ *brisbanensis* Miskin	Newcastle		82
242.	♀.	„ *myrmecophila* Waterhouse & Lyell	Sydney	January	83
243.	♂.	„ *brisbanensis* Miskin	Pambula	December	82
244.	♂.	*Syntarucus pseudocassius* Murray	Mackay	May	100
245.	♀.	„ *pseudocassius* Murray	Brisbane	April	100
246.	♂.	*Lucia lucanus* Fabricius	Gisborne	March	111
247.	♀.	„ *lucanus* Fabricius	Gisborne	February	111
248.	♀.	„ *lucanus* Fabricius	Gisborne	March	111
249.	♂.	*Paralucia aurifer* Blanchard	Macedon	December	112
250.	♀.	„ *aurifer* Blanchard	Gisborne	December	112
251.	♂.	„ *aurifer* Blanchard	Macedon	November	112
252.	♂.	„ *pyrodiscus* Rosenstock	Sydney	December	112
253.	♂.	„ *pyrodiscus* Rosenstock	Blue Mts.	December	112
254.	♀.	*Syntarucus pseudocassius* Murray	Brisbane	April	100
255.	♂.	*Zizina delospila* Waterhouse (from example in the Macleay Museum).	N. W. Australia		106
256.	♂.	*Miletus epicurus* Miskin	Brisbane	October	91
257.	♀.	„ *epicurus* Miskin	Brisbane	November	91
258.	♂.	„ *epicurus* Miskin	Brisbane	October	91
259.	♂.	„ *cyane* nov. (same example as No. 216).	Mackay	September	90
260.	♀.	„ *cyane* nov.	Sandgate		90
261.	♂.	*Pseudodipsas cephenes* Hewitson	Mackay	February	82
262.	♀.	„ *cephenes* Hewitson	Atherton	November	82
263.	♀.	„ *cephenes* Hewitson	Kuranda	January	82
264.	♂.	*Miletus halyaetus* Hewitson (from coloured figure of example in British Museum).	West Australia		87
265.	♂.	*Pepliophorus eclectus* Grose-Smith	Darnley Is.		102
266.	♂.	*Candalides gilberti* Waterhouse	Darwin	November	78

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267.	♀.	*Candalides gilberti* Waterhouse	Darwin	November	78
268.	♂.	*Jamides amarauge* Druce	Darnley Is.		101
269.	♂.	*Thysonotis taygetus* Felder	Brisbane	July	92
270.	♂.	*Philiris diana* nov.	Kuranda	March	76
271.	♀.	„ *diana* nov.	Kuranda	April	76
272.	♀.	*Candalides xanthospilos* Hubner	Kuranda	January	77
273.	♂.	*Theclinesthes atrosuffusa* Waterhouse (same example as No. 327).	Sydney	September	110
274.	♀.	*Deudorix agimar* Fruhstorfer	Cape York	February	132
275.	♀.	„ *agimar* Fruhstorfer	Cape York	February	132
276.	♂.	*Rapala democles* Miskin	Prince of Wales Is.	May	133
277.	♂.	„ *democles* Miskin	Prince of Wales Is.	May	133
278.	♀.	*Arhopala wildei* Miskin	Kuranda	May	125
279.	♂.	*Eupsychellus dionisius* Boisduval (from example in the Macleay Museum).	Darnley Is.		74
280.	♂.	*Neopithecops lucifer* Rober	Darnley Is.		74
281.	♂.	*Nacaduba berenice* Herrich-Schaeffer	Mackay	March	97
282.	♀.	„ *berenice* Herrich-Schaeffer	Brisbane	May	97
283.	♀.	„ *berenice* Herrich-Schaeffer	Brisbane	July	97
284.	♂.	„ *berenice* Herrich-Schaeffer	Mackay	February	97
285.	♂.	*Lampides damoetes* Fabricius	Sydney	March	103
286.	♀.	„ *damoetes* Fabricius	Sydney	March	103
287.	♀.	„ *damoetes* Fabricius	Sydney	March	103
288.	♂.	*Lycaenesthes affinis* Waterhouse & Turner	Mackay	March	104
289.	♀.	„ *affinis* Waterhouse & Turner	Thursday Is.	May	104
290.	♂.	*Nacaduba parma* nov.	Richmond R.	May	95
291.	♂.	„ *parma* nov.	Brisbane		95
292.	♀.	„ *parma* nov.	Kuranda	April	95
293.	♀.	„ *parma* nov.	Mackay	April	95
294.	♂.	*Jamides phaseli* Mathew	Mackay	April	101
295.	♂.	„ *phaseli* Mathew	Kuranda	November	101
296.	♀.	„ *phaseli* Mathew	Mackay	April	101
297.	♀.	*Lycaenesthes affinis* Waterhouse & Turner	Mackay	March	104
298.	♂.	„ *godeffroyi* Semper	Cape York	May	104
299.	♂.	*Nacaduba lineata* Murray	Richmond R.	May	94
300.	♂.	„ *lineata* Murray	Richmond R.	May	94
301.	♀.	„ *lineata* Murray	Richmond R.	April	94
302.	♀.	„ *lineata* Murray	Richmond R.	April	94
303.	♂.	*Catochrysops platissa* Herrich-Schaeffer	Mackay	September	103
304.	♂.	„ *platissa* Herrich-Schaeffer	Cooktown	October	103
305.	♀.	„ *platissa* Herrich-Schaeffer	Mackay	April	103
306.	♂.	*Lycaenesthes godeffroyi* Semper	Cape York	May	104
307.	♀.	„ *godeffroyi* Semper	Kuranda	March	104
308.	♂.	*Nacaduba tasmanica* Miskin	Kuranda	April	95
309.	♂.	„ *tasmanica* Miskin	Kuranda	October	95
310.	♀.	„ *tasmanica* Miskin	Kuranda	March	95
311.	♀.	„ *tasmanica* Miskin	Kuranda	September	95
312.	♂.	„ *estrella* nov.	Cooktown	November	96
313.	♂.	*Theclinesthes scintillata* Lucas	Brisbane		110
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315.	♀.	„ *scintillata* Lucas	Kuranda	September	110

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317.	♀.	„ *cnidus* nov.	Mackay	April	100
318.	♂.	*Nacaduba florinda* Butler	Mackay	March	97
319.	♂.	„ *florinda* Butler	Brisbane	May	97
320.	♀.	„ *florinda* Butler	Richmond R.	April	97
321.	♀.	„ *florinda* Butler	Brisbane	September	97
322.	♂.	„ *biocellata* Felder	Sydney	January	99
323.	♂.	„ *biocellata* Felder	Sydney	February	99
324.	♀.	„ *biocellata* Felder	Sydney	February	99
325.	♂.	*Chilades putli* Kollar	Mackay	February	105
326.	♂.	„ *putli* Kollar	Mackay	June	105
327.	♂.	*Theclinesthes atrosuffusa* Waterhouse (same example as No. 273).	Sydney	September	110
328.	♂.	„ *miskini* Lucas	Sydney	March	110
329.	♂.	„ *miskini* Lucas	Sydney	March	110
330.	♀.	„ *miskini* Lucas	Mackay	March	110
331.	♀.	„ *atrosuffusa* Waterhouse	Moruya	August	110
332.	♂.	*Euchrysops cnidus* nov.	Mackay	February	100
333.	♂.	*Candalides cyprotus* Olliff	Blue Mts.	October	78
334.	♀.	„ *cyprotus* Olliff	Sydney	September	78
335.	♂.	„ *cyprotus* Olliff	Sydney	October	78
336.	♂.	„ *simplexa* Tepper	Birchip	August	81
337.	♂.	„ *simplexa* Tepper	Birchip	August	81
338.	♂.	„ *hyacinthina* Semper	Pambula	December	80
339.	♂.	„ *hyacinthina* Semper	Sydney	February	80
340.	♂.	„ *eugenia* nov.	Kuranda	December	80
341.	♀.	„ *eugenia* nov.	Kuranda	March	80
342.	♂.	„ *erinus* Fabricius	Kuranda	January	80
343.	♀.	„ *erinus* Fabricius	Townsville	May	80
344.	♂.	„ *acasta* Cox	Sydney	October	81
345.	♂.	„ *acasta* Cox	Sydney	February	81
346.	♂.	*Everes argiades* Pallas	Mackay	September	99
347.	♀.	„ *argiades* Pallas	Townsville	April	99
348.	♂.	„ *argiades* Pallas	Brisbane		99
349.	♂.	*Nacaduba hyllus* nov.	Cooktown	October	97
350.	♀.	„ *hyllus* nov.	Cape York	January	97
351.	♂.	„ *hyllus* nov.	Cooktown	October	97
352.	♀.	„ *auletes* nov.	Cape York	April	98
353.	♂.	„ *felderi* Murray	Illawarra	April	98
354.	♀.	„ *felderi* Murray	Richmond R.	May	98
355.	♀.	„ *felderi* Murray	Brisbane		98
356.	♂.	„ *dubiosa* Semper	Brisbane		98
357.	♀.	„ *dubiosa* Semper	Mackay	September	98
358.	♀.	„ *dubiosa* Semper	Townsville		98
359.	♀.	„ *auletes* nov.	Kuranda	March	98
360.	♂.	*Neolucia sulpitius* Miskin	Brisbane	September	109
361.	♀.	„ *sulpitius* Miskin	Brisbane	February	109
362.	♀.	„ *sulpitius* Miskin	Brisbane	November	109
363.	♂.	„ *obscura* nov.	Cooktown	October	109
364.	♀.	„ *obscura* nov.	Cairns	October	109
365.	♀.	„ *obscura* nov.	Cooktown	November	109

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368.	♂.	*Zizeeria karsandra* Moore	Brisbane		106
369.	♂.	„ *karsandra* Moore	Brisbane		106
370.	♂.	*Neolucia agricola* Westwood	Sydney	September	107
371.	♀.	„ *insulana* nov.	Zeehan	February	107
372.	♀.	„ *agricola* Westwood	Sydney	October	107
373.	♂.	„ *hobartensis* Miskin	Mt. Kosciusko	January	108
374.	♀.	„ *hobartensis* Miskin	Mt. Erica	February	108
375.	♂.	„ *hobartensis* Miskin	Mt. Kosciusko	January	108
376.	♀.	„ *hobartensis* Miskin	Mt. Kosciusko	January	108
377.	♂.	„ *serpentata* Herrich-Schaeffer	Illawarra	April	108
378.	♀.	*Zizeeria alsulus* Herrich-Schaeffer	Mackay	December	106
379.	♂.	„ *alsulus* Herrich-Schaeffer	Mackay	February	106
380.	♂.	*Zizina labradus* Godart	Sydney	November	105
381.	♂.	„ *labradus* Godart	Sydney	November	105
382.	♂.	*Candalides heathi* Cox	Sydney	December	78
383.	♂.	„ *heathi* Cox	Sydney	December	78
384.	♂.	*Neolucia mathewi* Miskin	Sydney	October	108
385.	♀.	„ *mathewi* Miskin	Sydney	October	108
386.	♂.	„ *mathewi* Miskin	Sydney	October	108
387.	♂.	„ *serpentata* Herrich-Schaeffer	Illawarra	April	108
388.	♀.	„ *serpentata* Herrich-Schaeffer	Richmond R.	May	108
389.	♂.	*Ogyris abrota* Westwood	Sydney	January	118
390.	♀.	„ *abrota* Westwood	Sydney	December	118
391.	♂.	„ *olane* Hewitson	Macedon	January	119
392.	♀.	„ *olane* Hewitson	Gisborne	December	119
393.	♂.	„ *barnardi* Miskin	Emerald	September	119
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395.	♂.	„ *ianthis* Waterhouse	Sydney	November	118
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401.	♀.	„ *waterhouseri* Bethune-Baker	Dimboola		122
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406A.	♀.	„ *idmo* Hewitson	Yarloop	November	121
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* 431. Wrongly marked on plate as male.

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* 539, 542, 543, 544. Wrongly marked on the plate as males.

** 545. Wrongly marked on the plate as female.

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* 568, 579, 581, 582, 586. Wrongly marked on the plate as males.

** 562 and 564. Wrongly marked on the plate as females.

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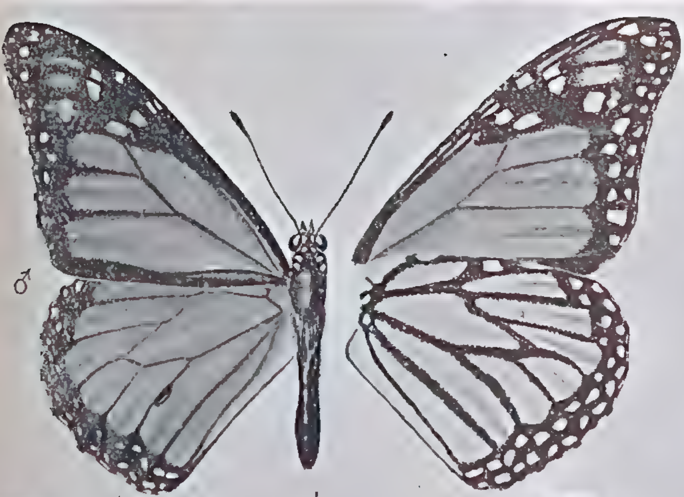

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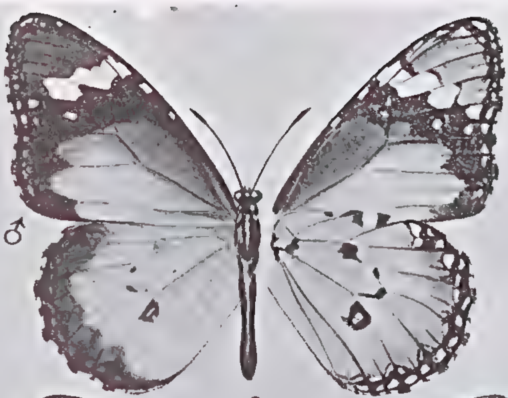

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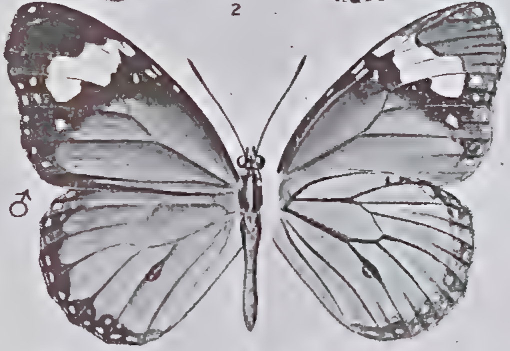

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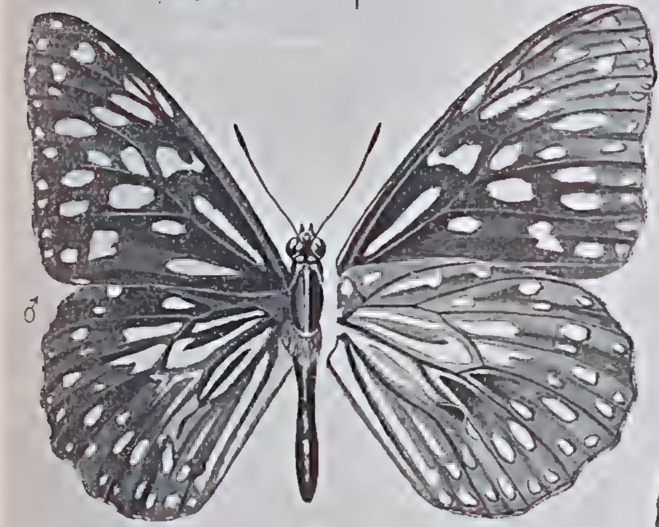

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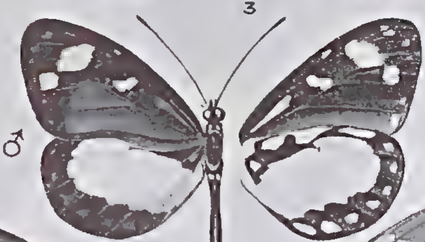

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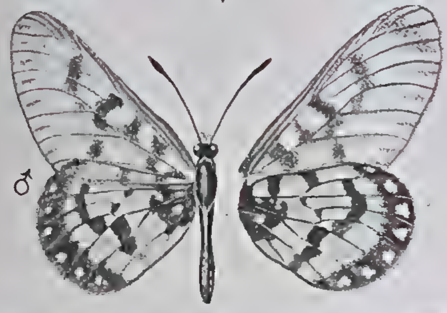

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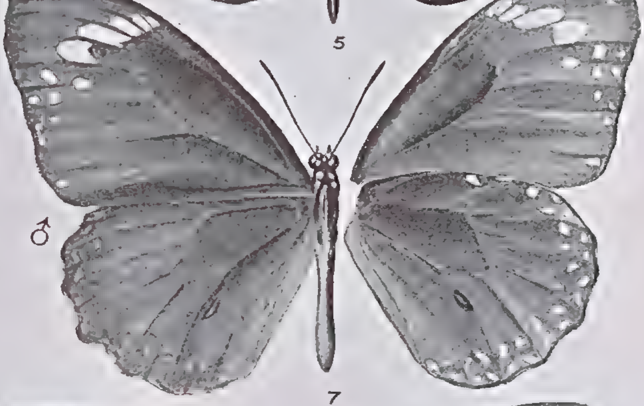

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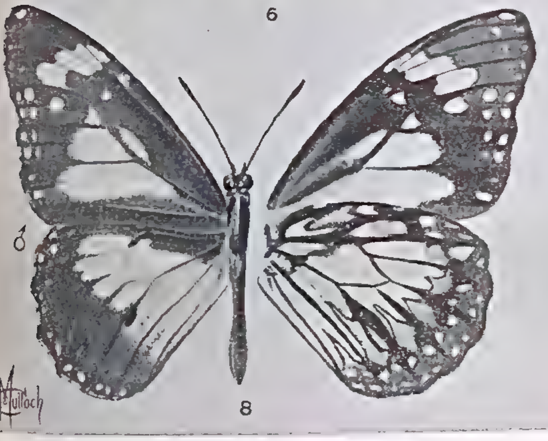

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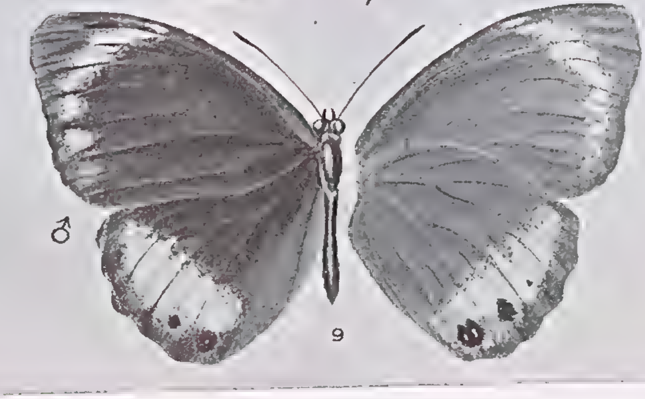

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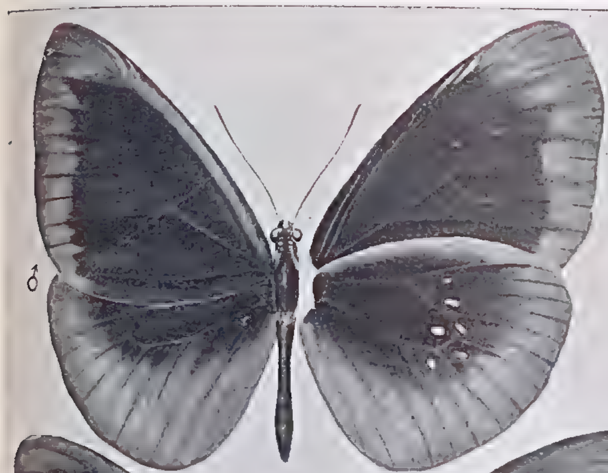

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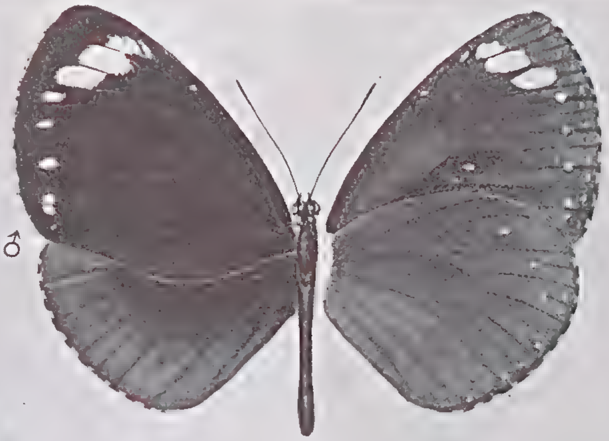

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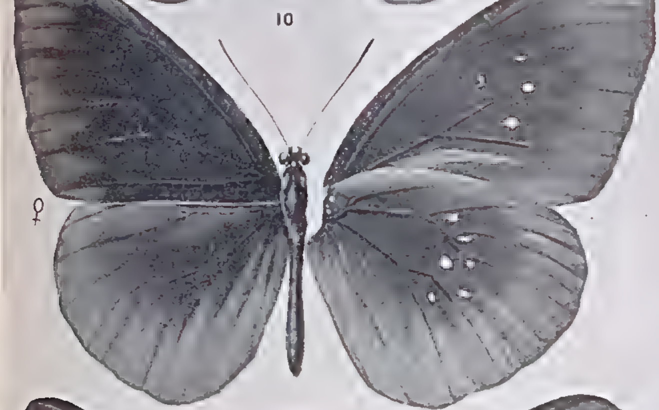

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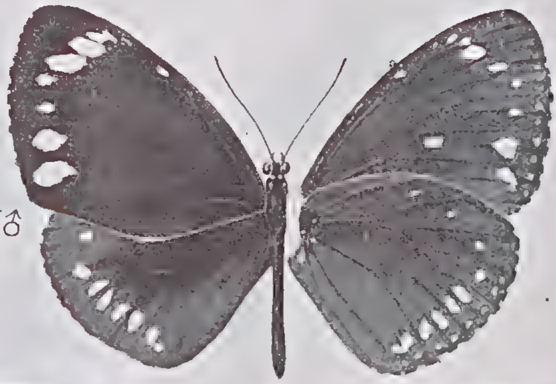

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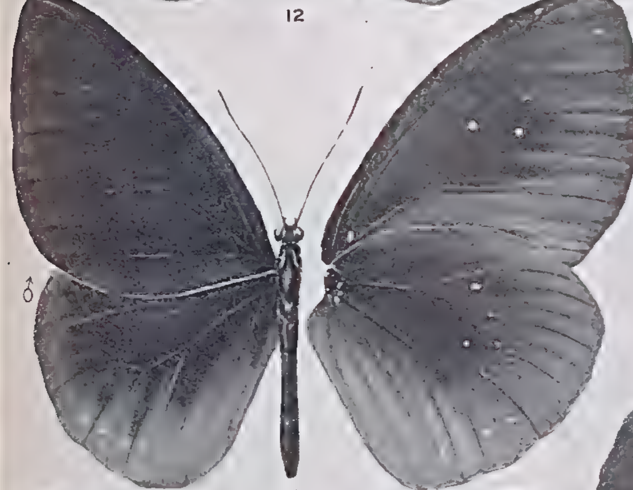

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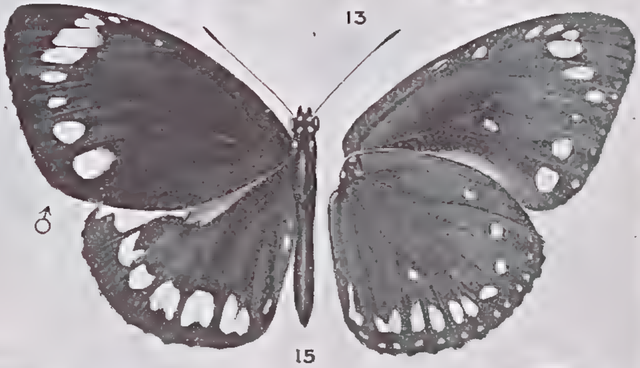

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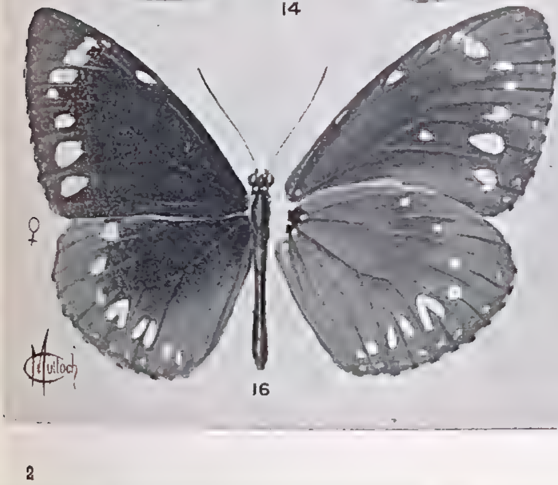

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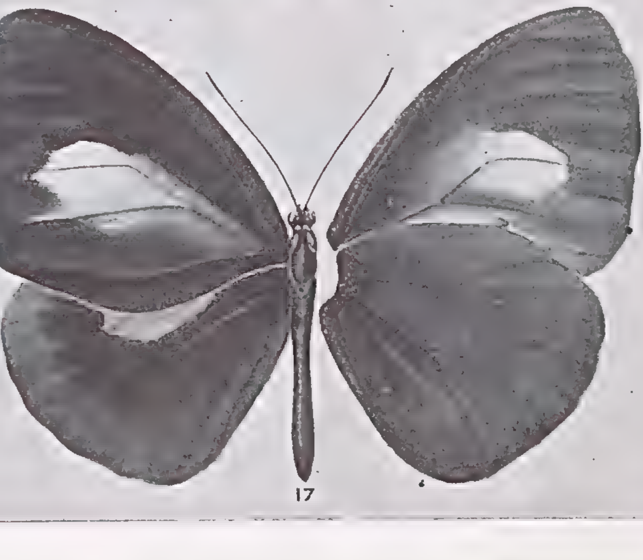

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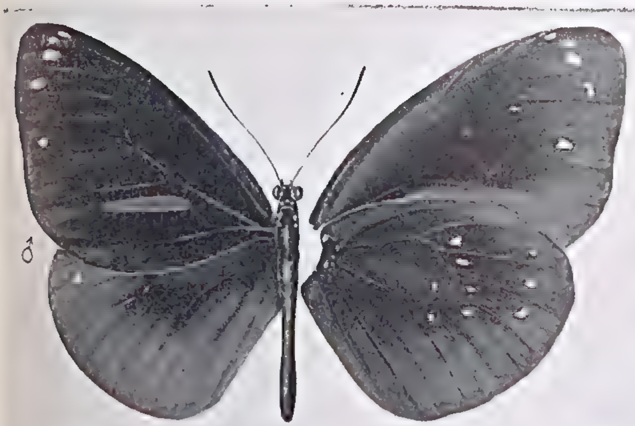

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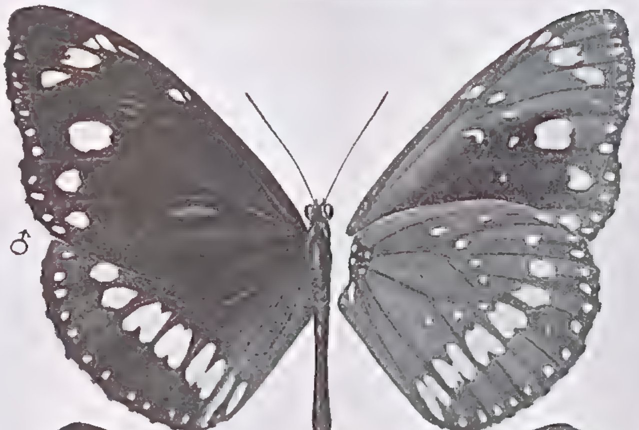

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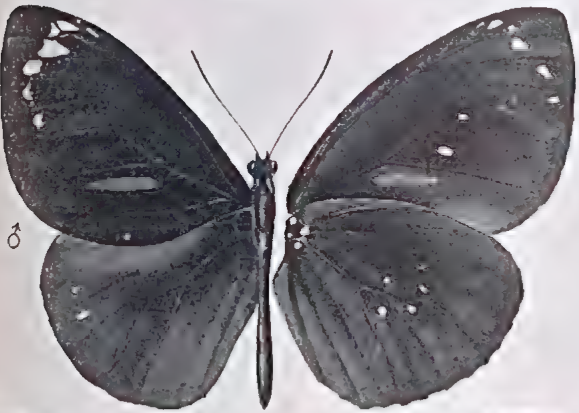

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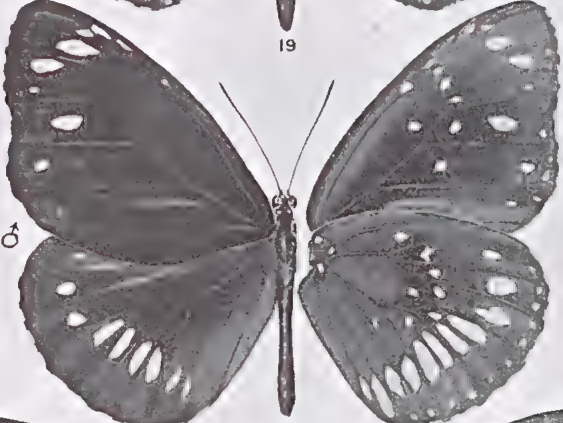

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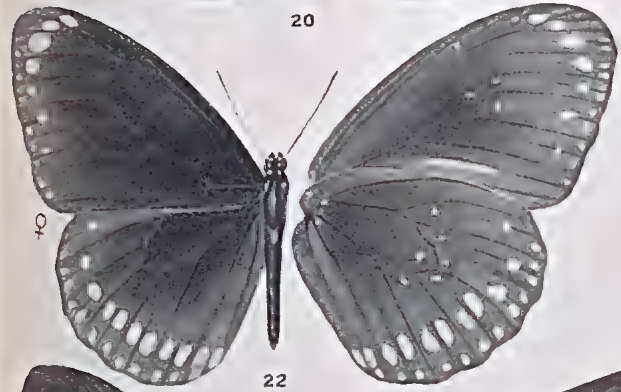

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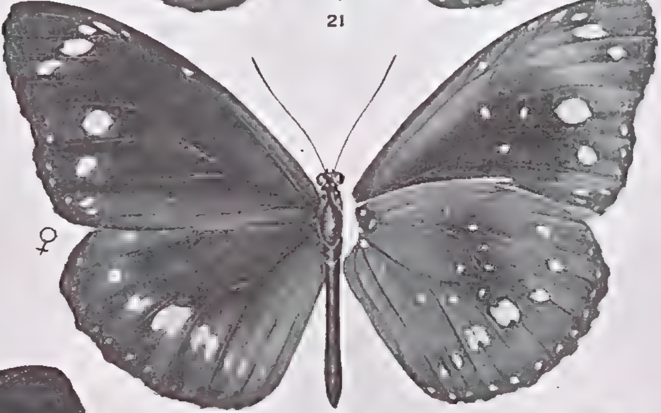

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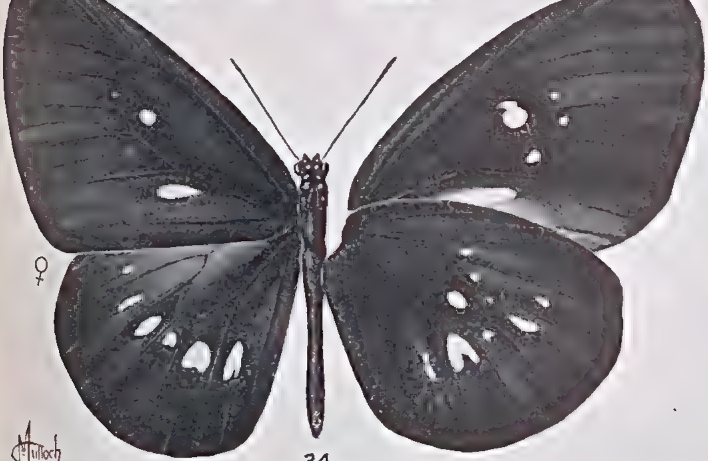

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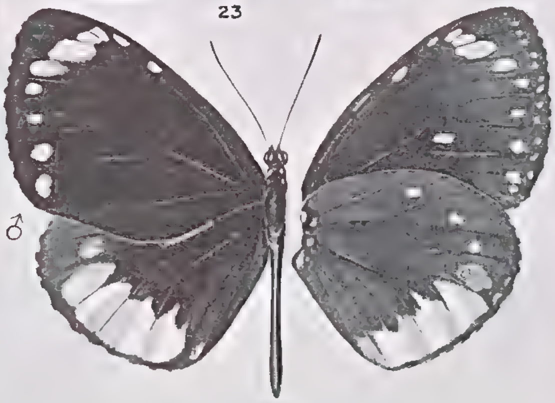

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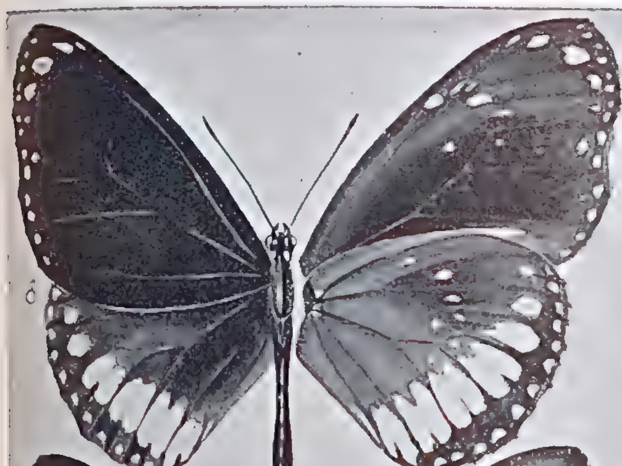
McCulloch



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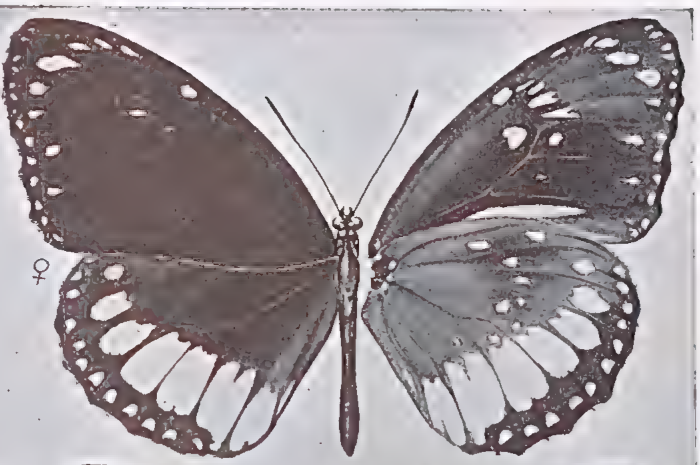

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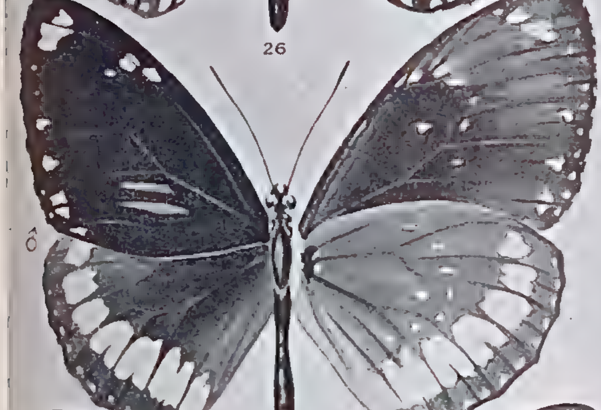

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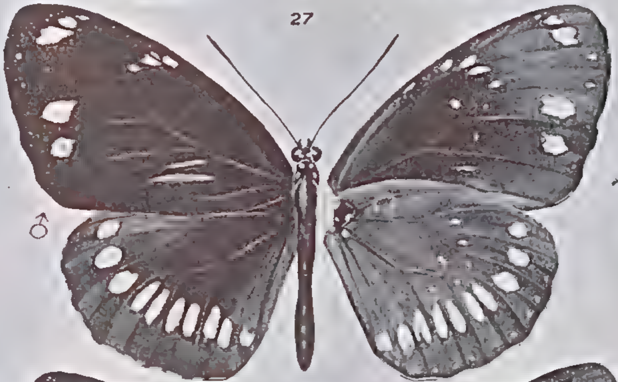

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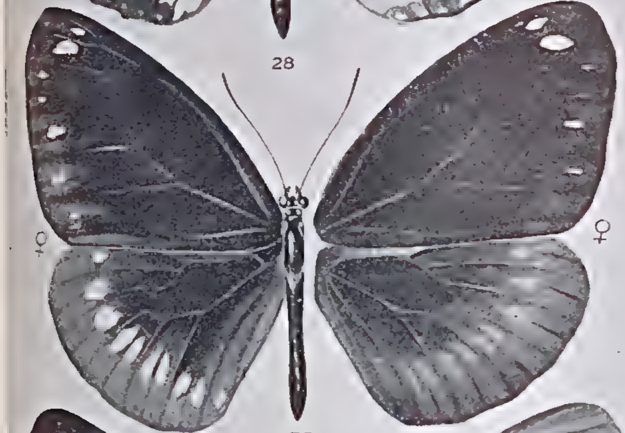

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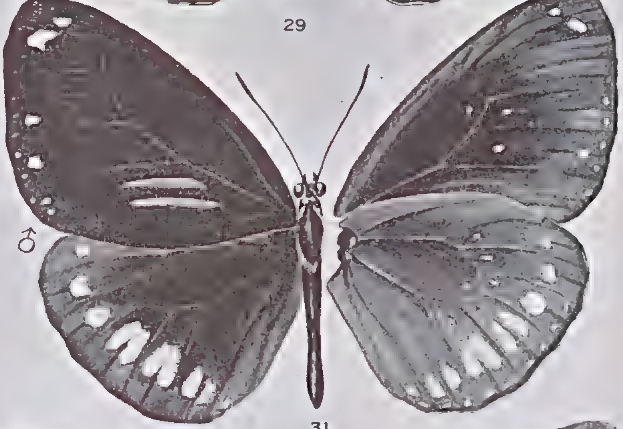

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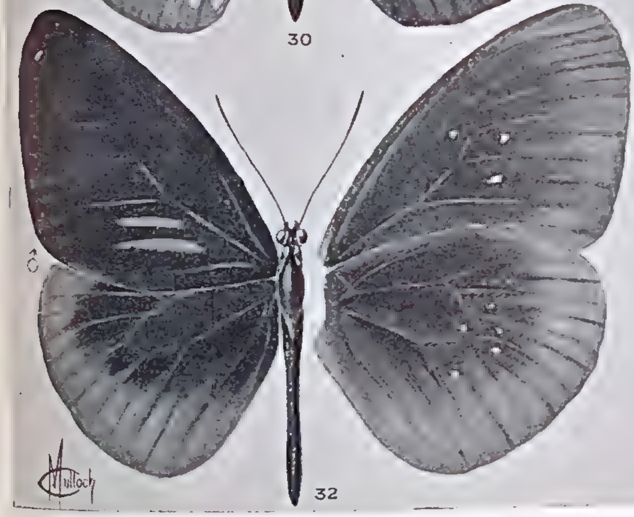

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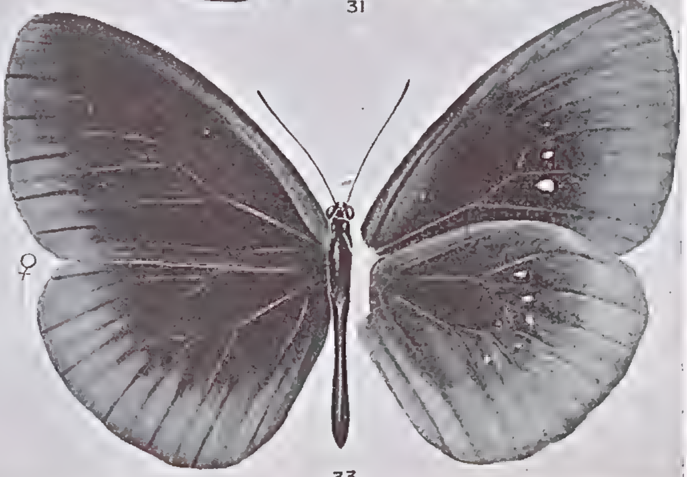

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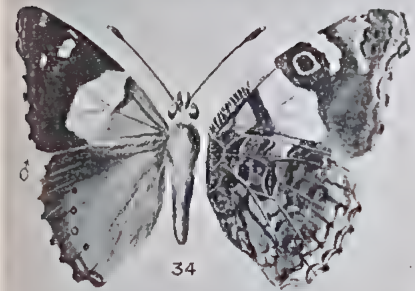

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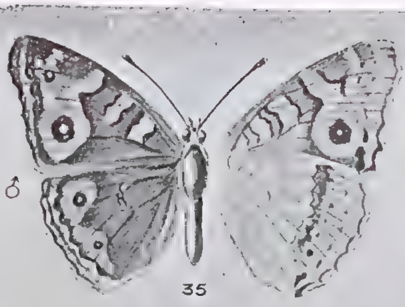

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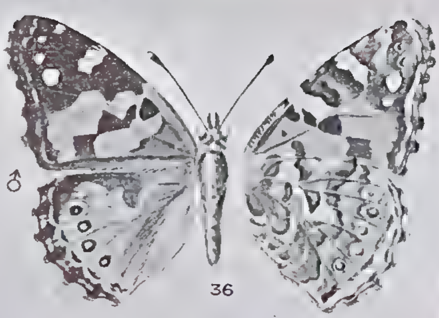

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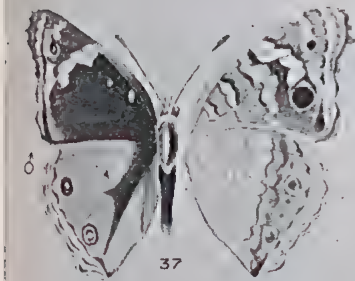

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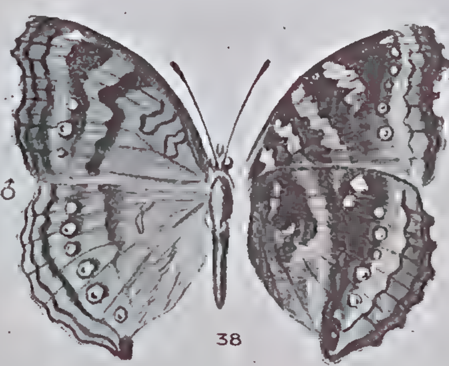

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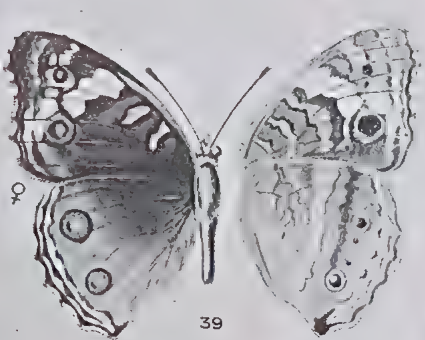

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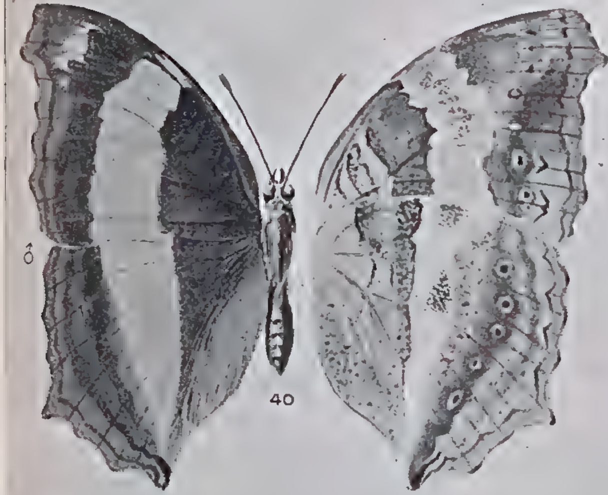

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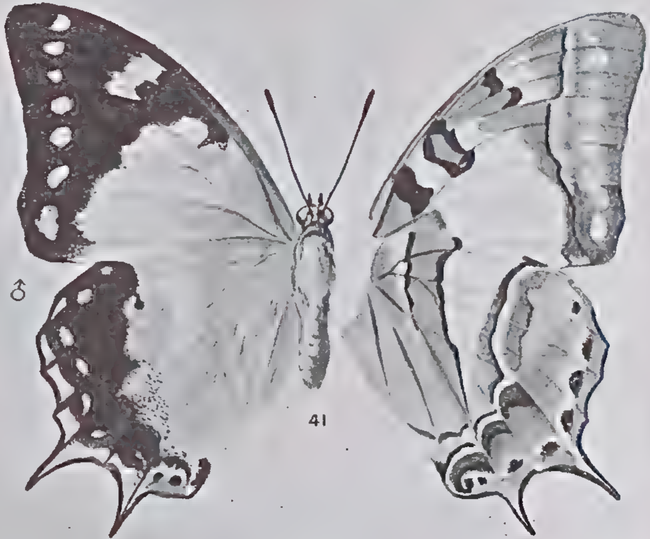

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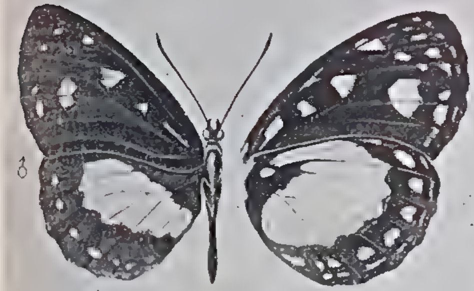

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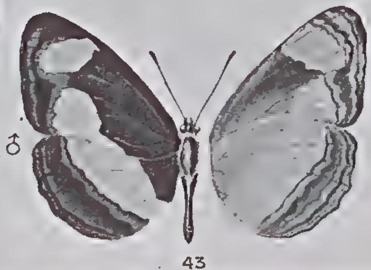

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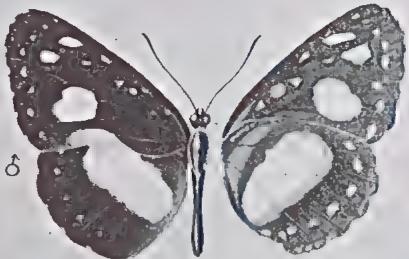

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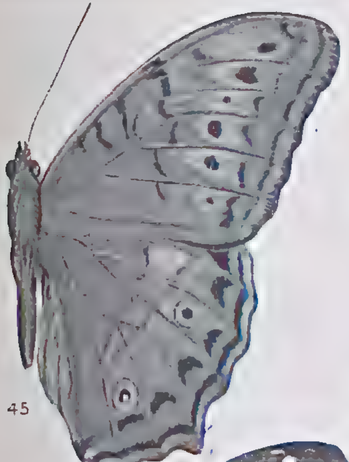
McCulloch



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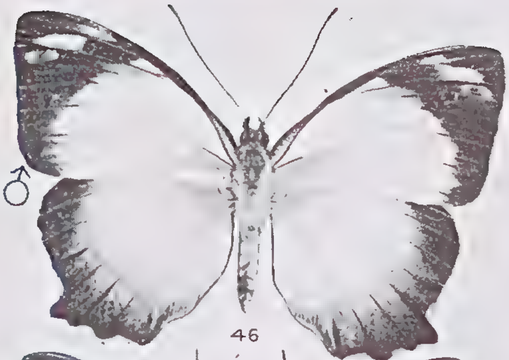

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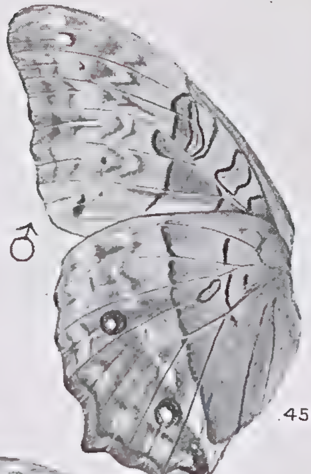

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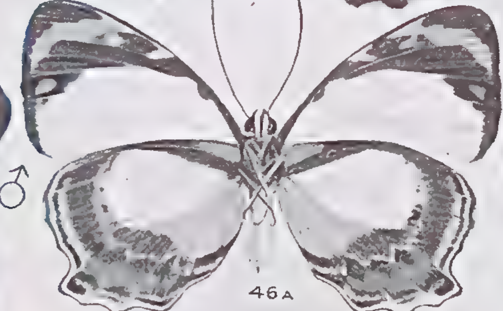

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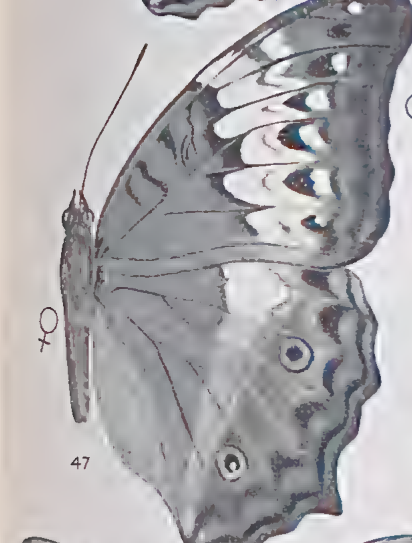

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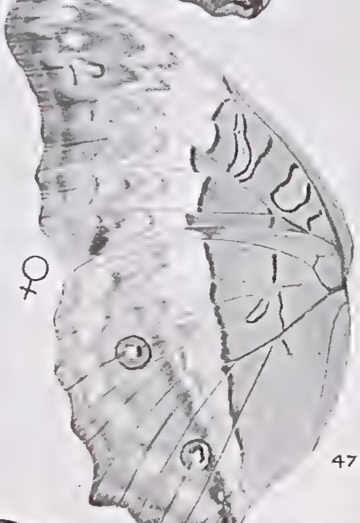

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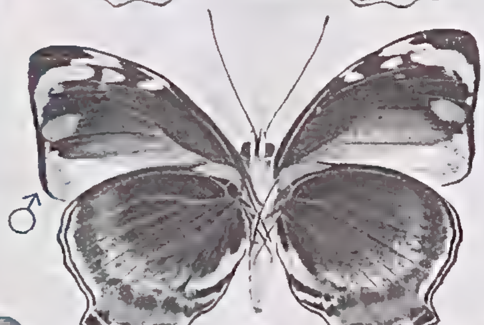

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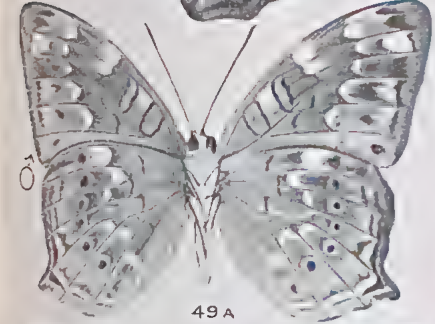

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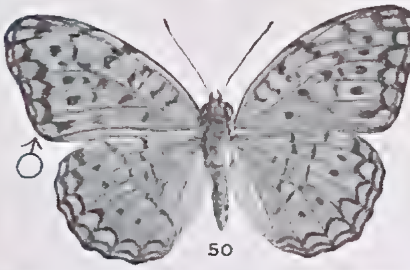

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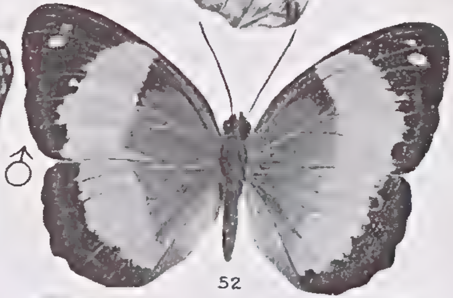

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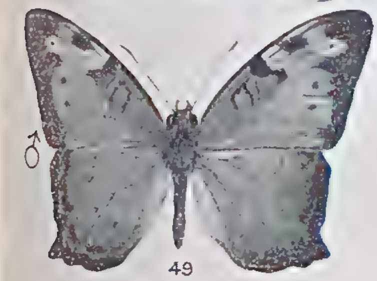

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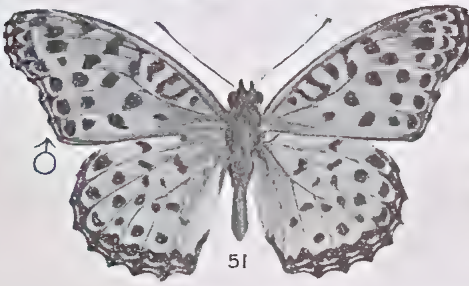

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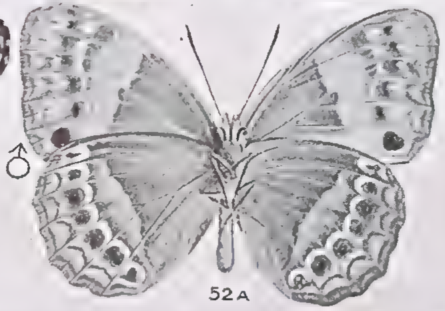

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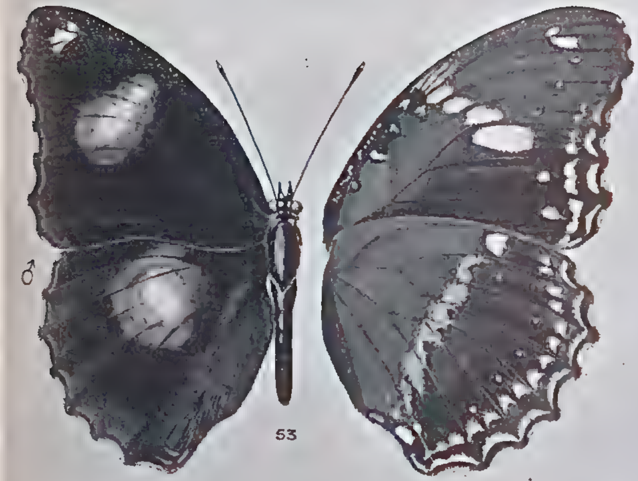

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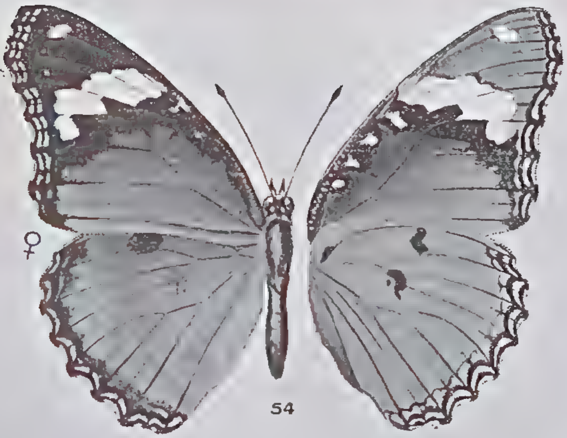

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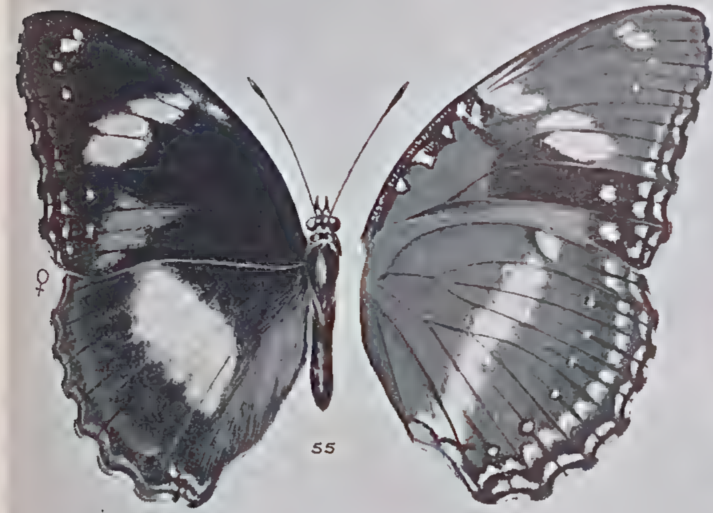

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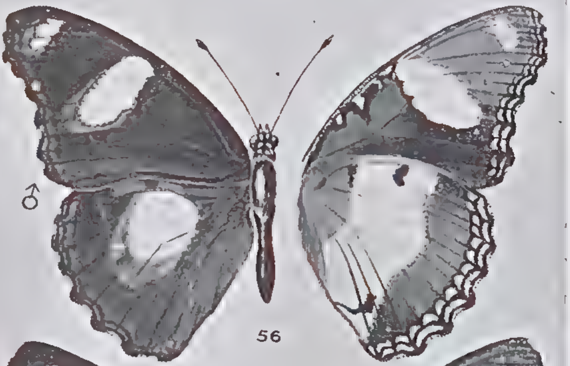

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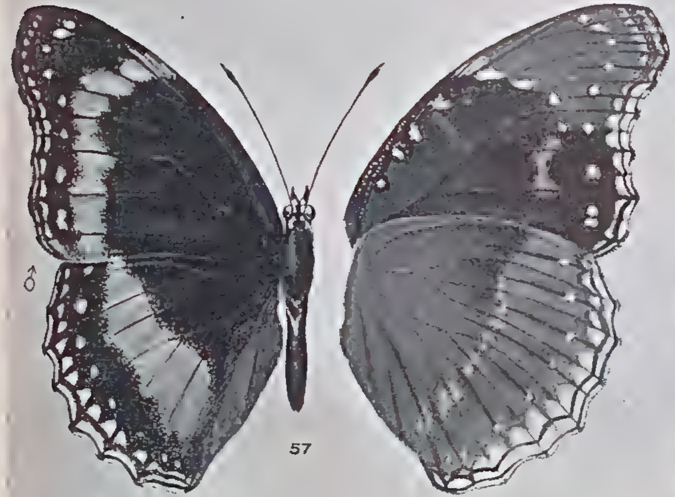

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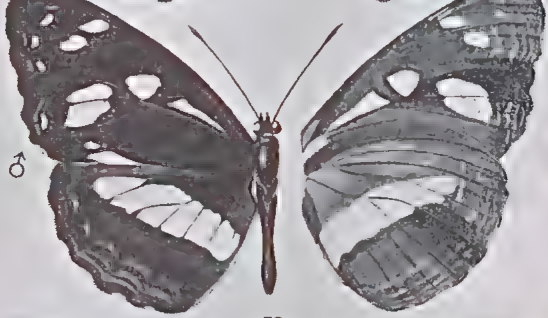

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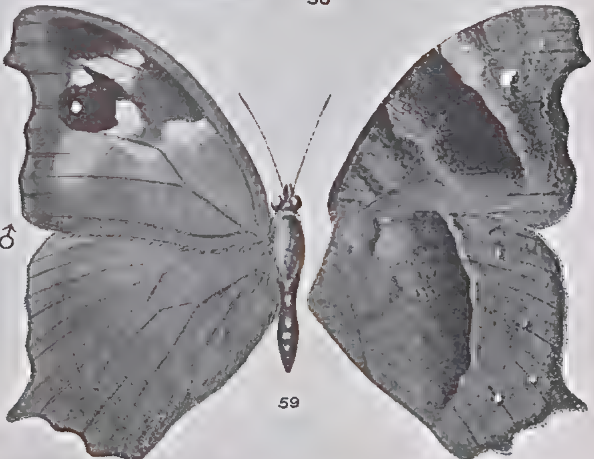

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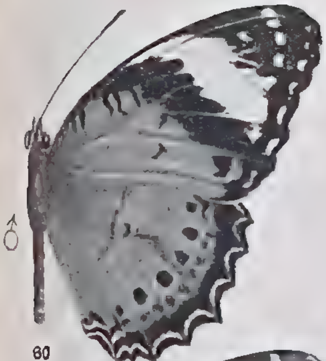

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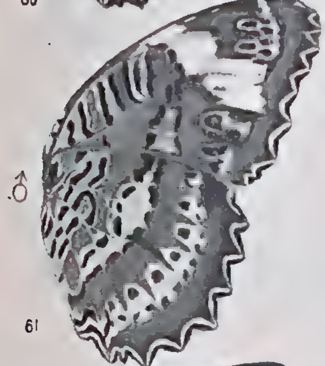

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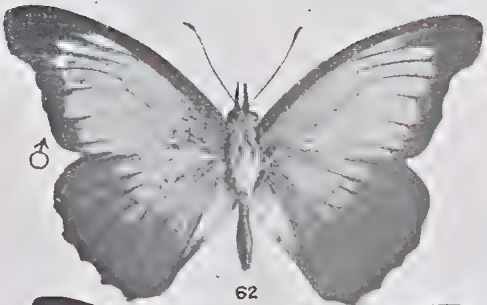

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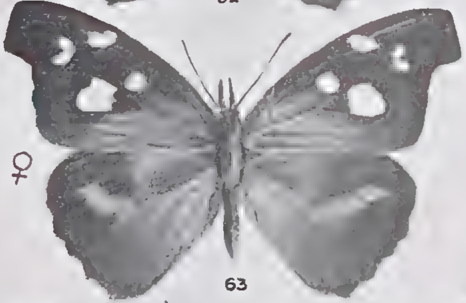

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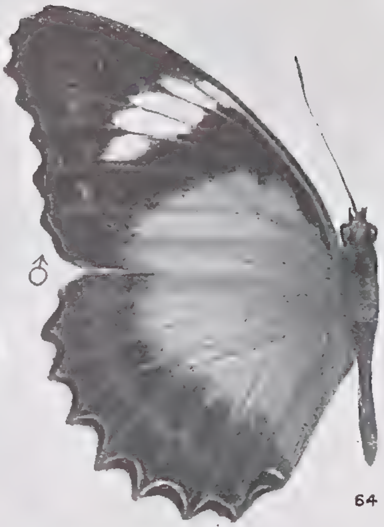

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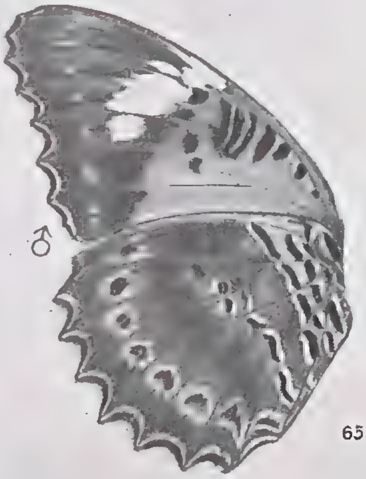

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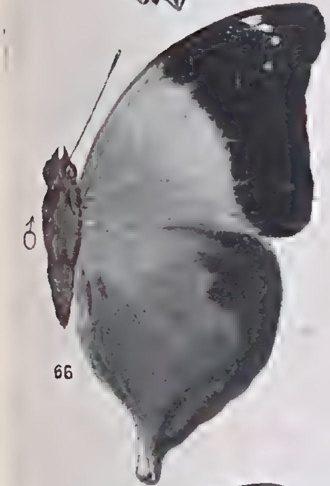

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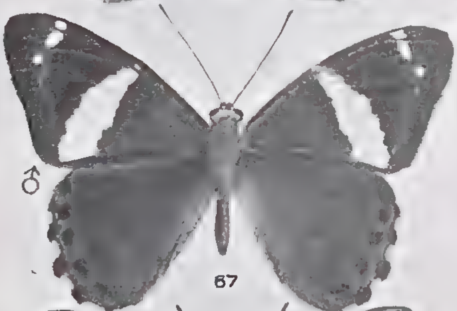

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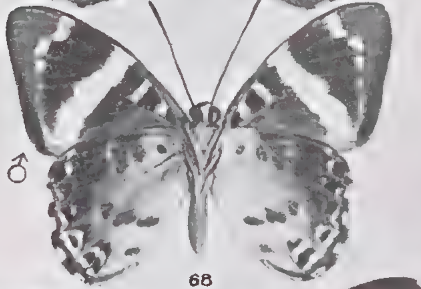

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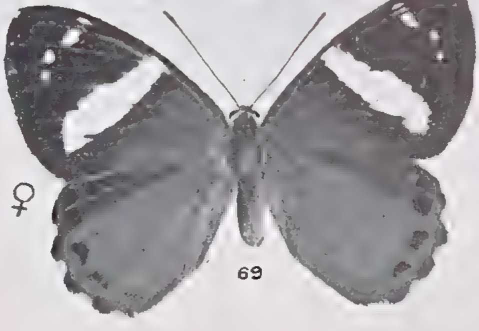

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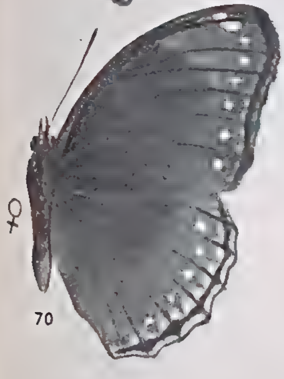

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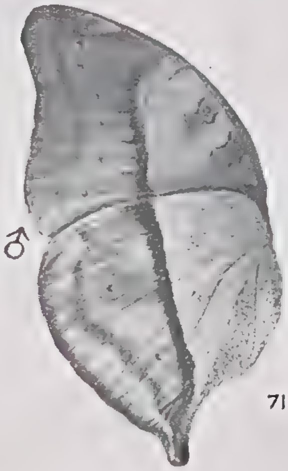

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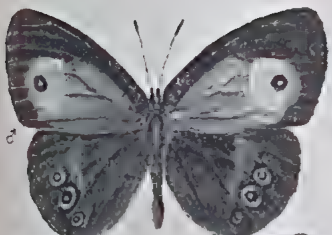

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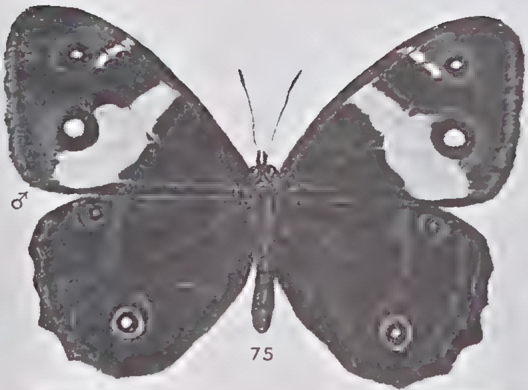

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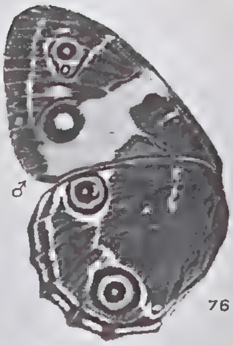

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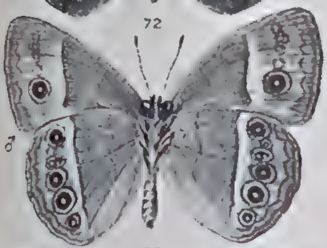

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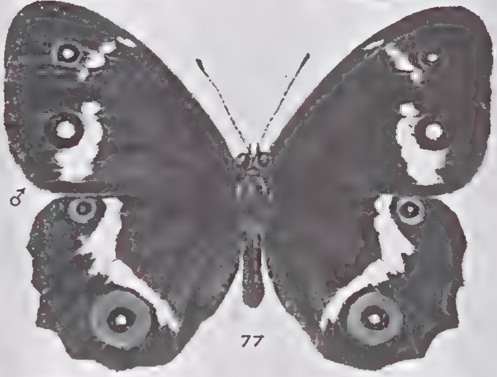

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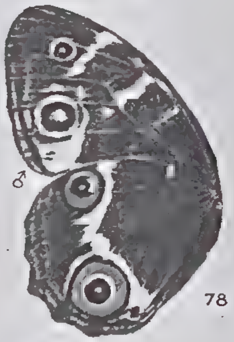

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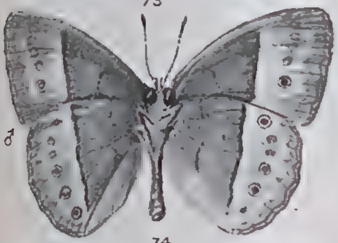

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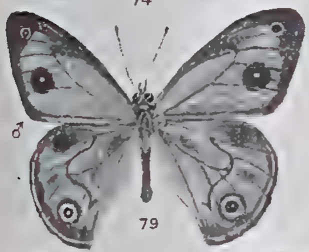

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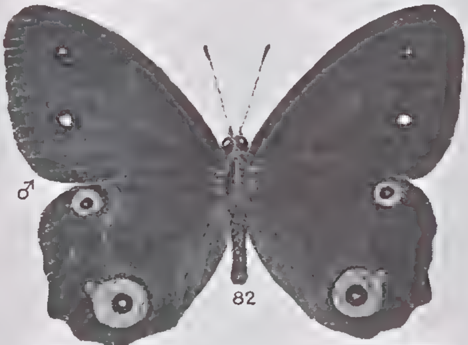

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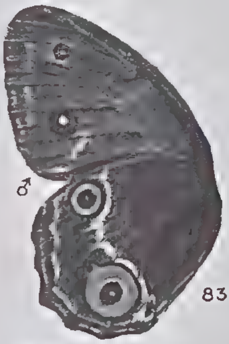

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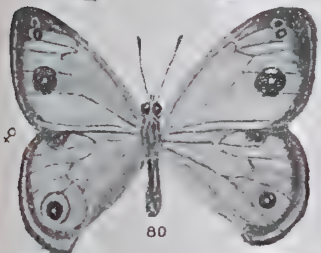

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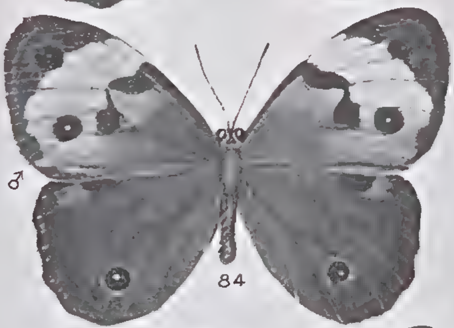

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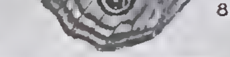

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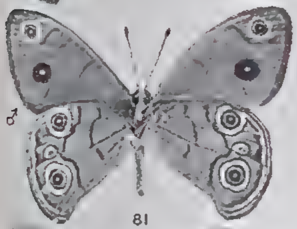

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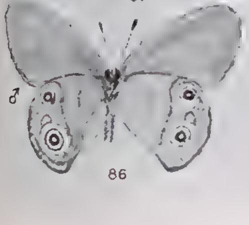

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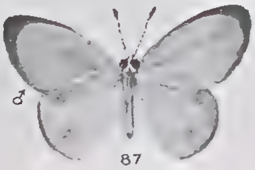

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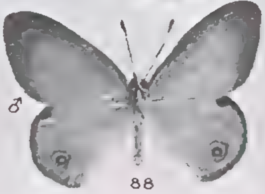

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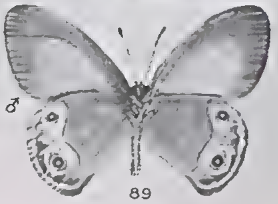

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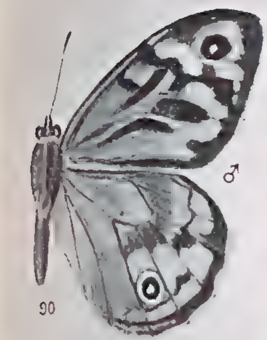

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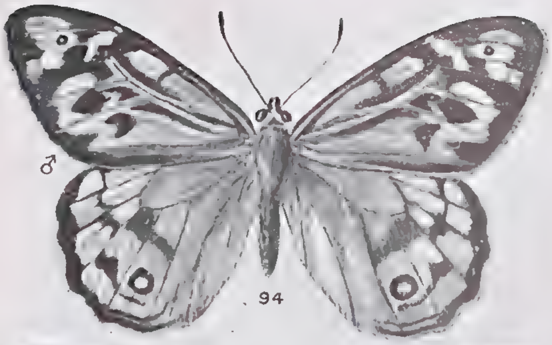

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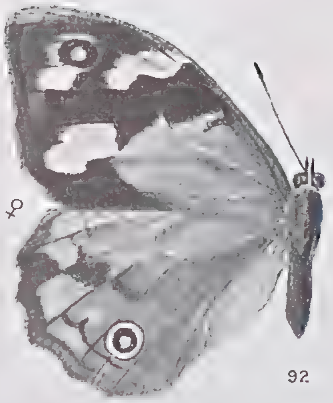

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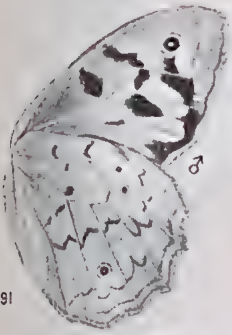

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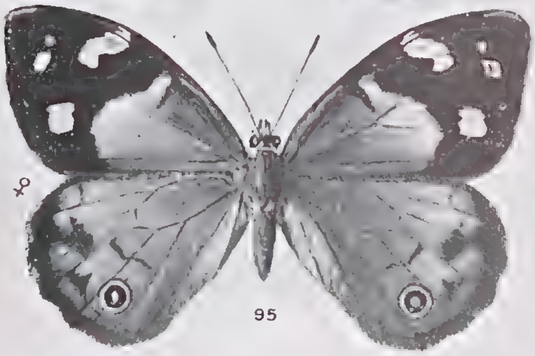

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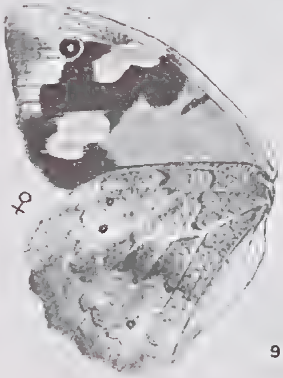

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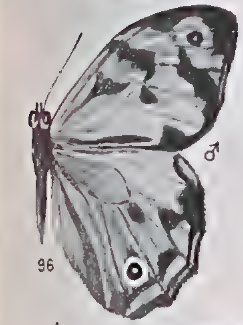

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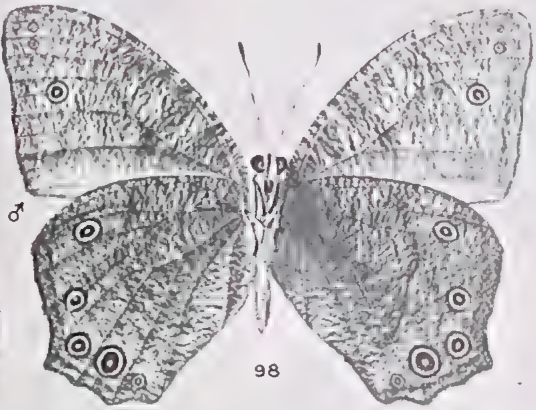

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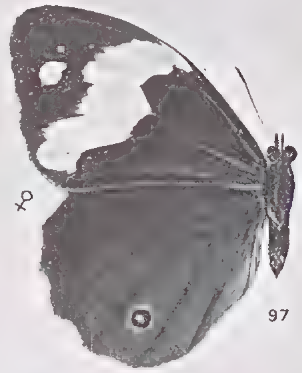

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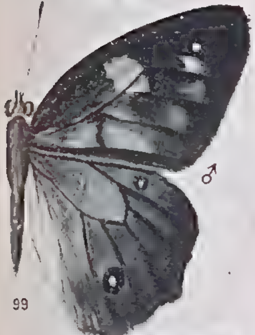

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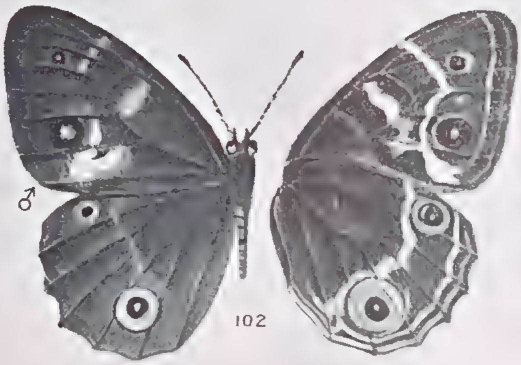

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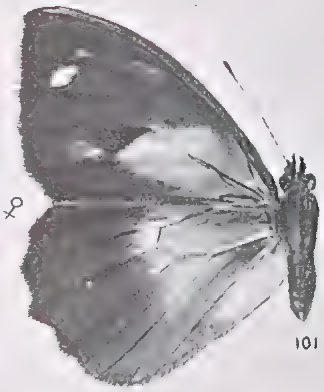

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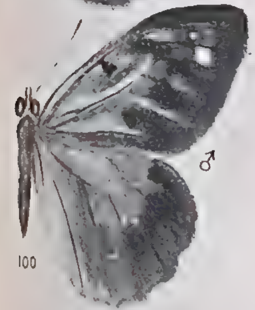

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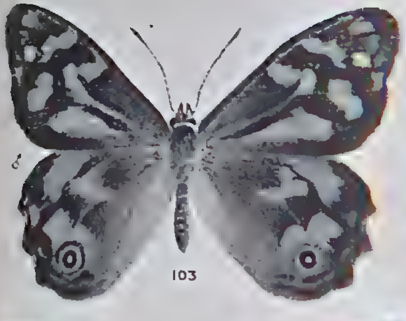
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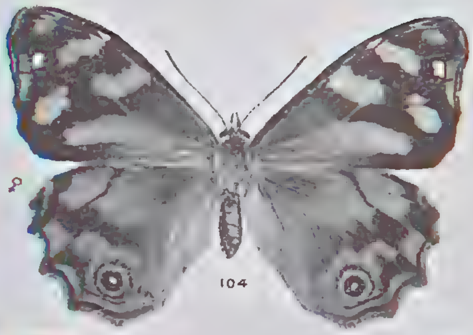
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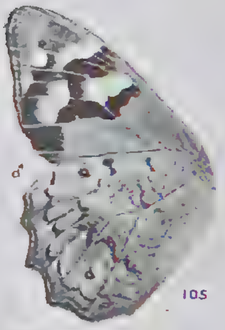
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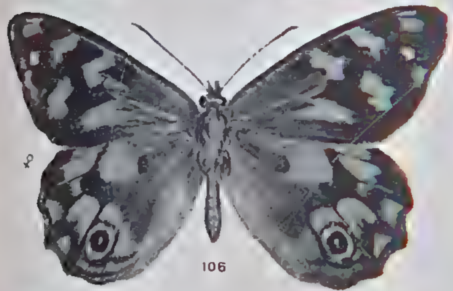
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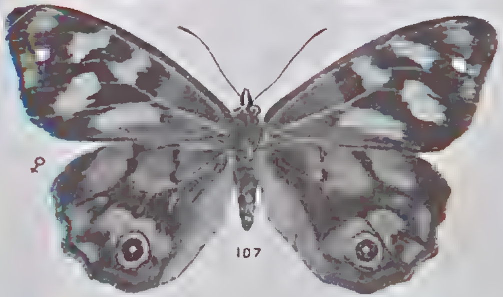
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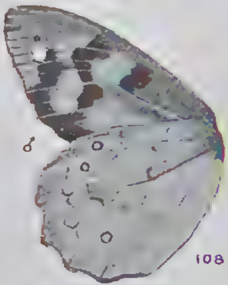
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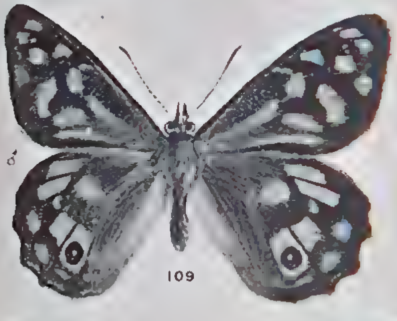
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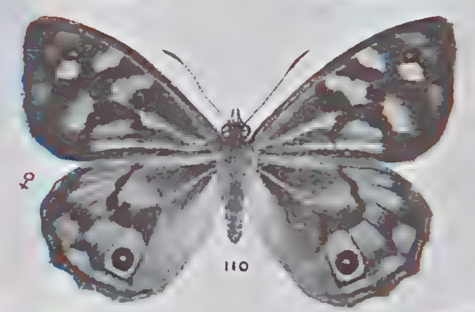
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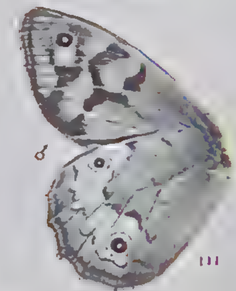
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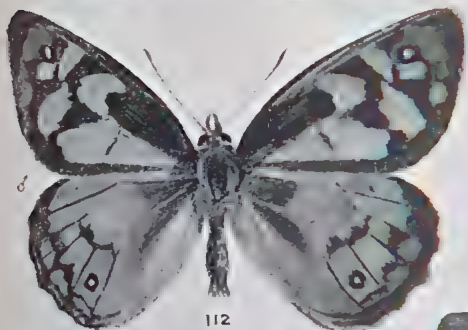
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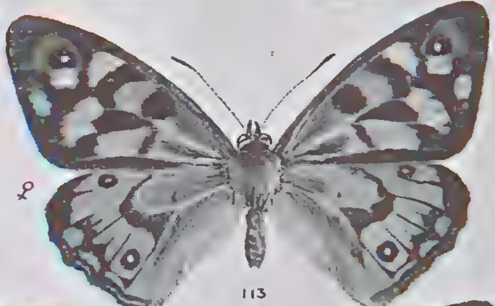
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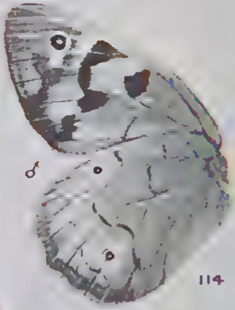
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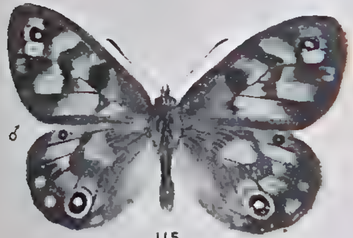
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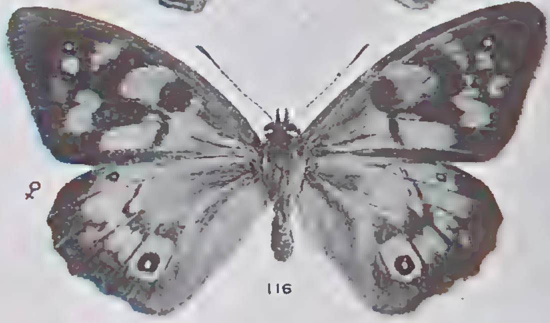
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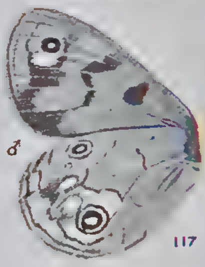
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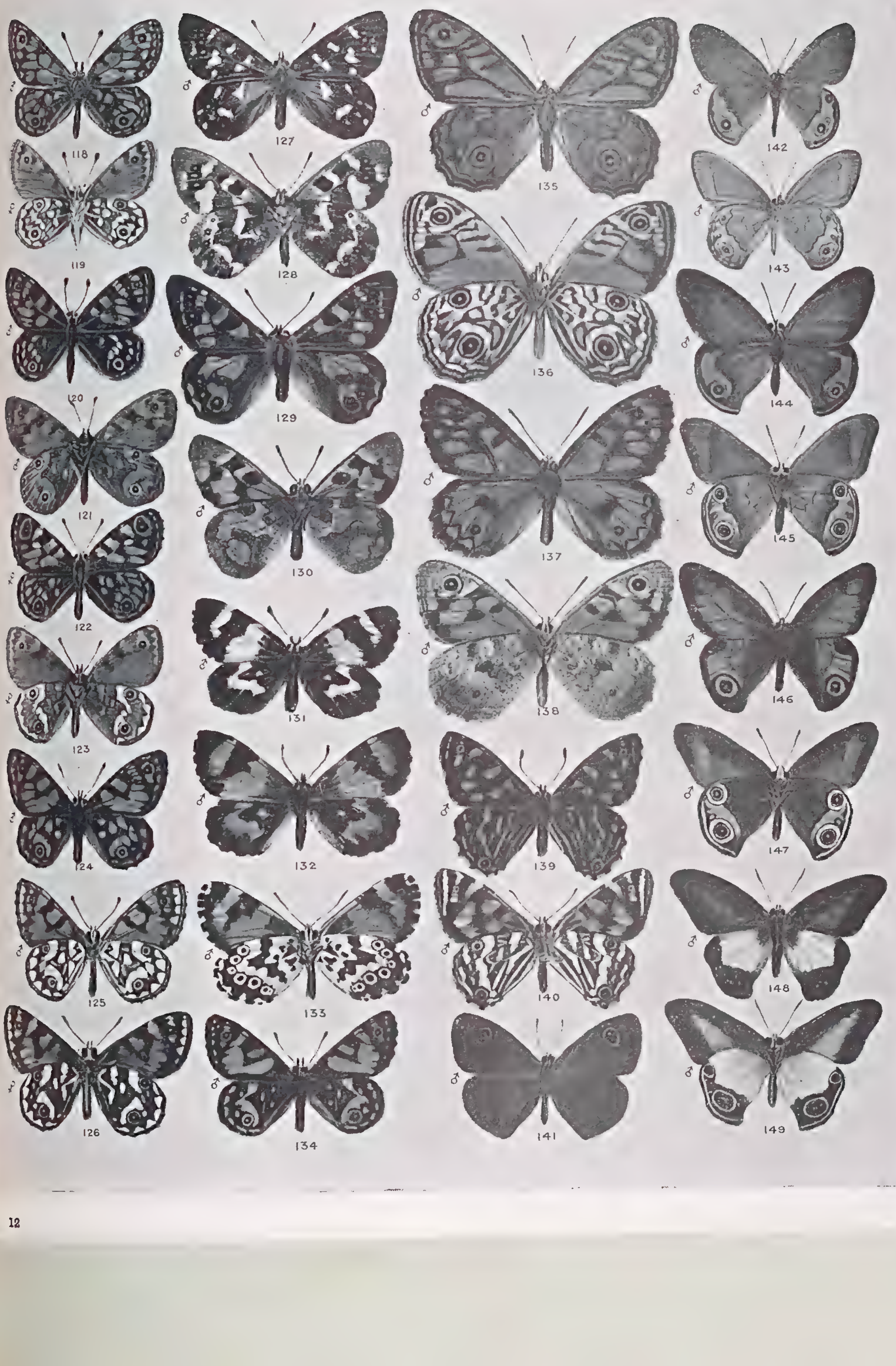
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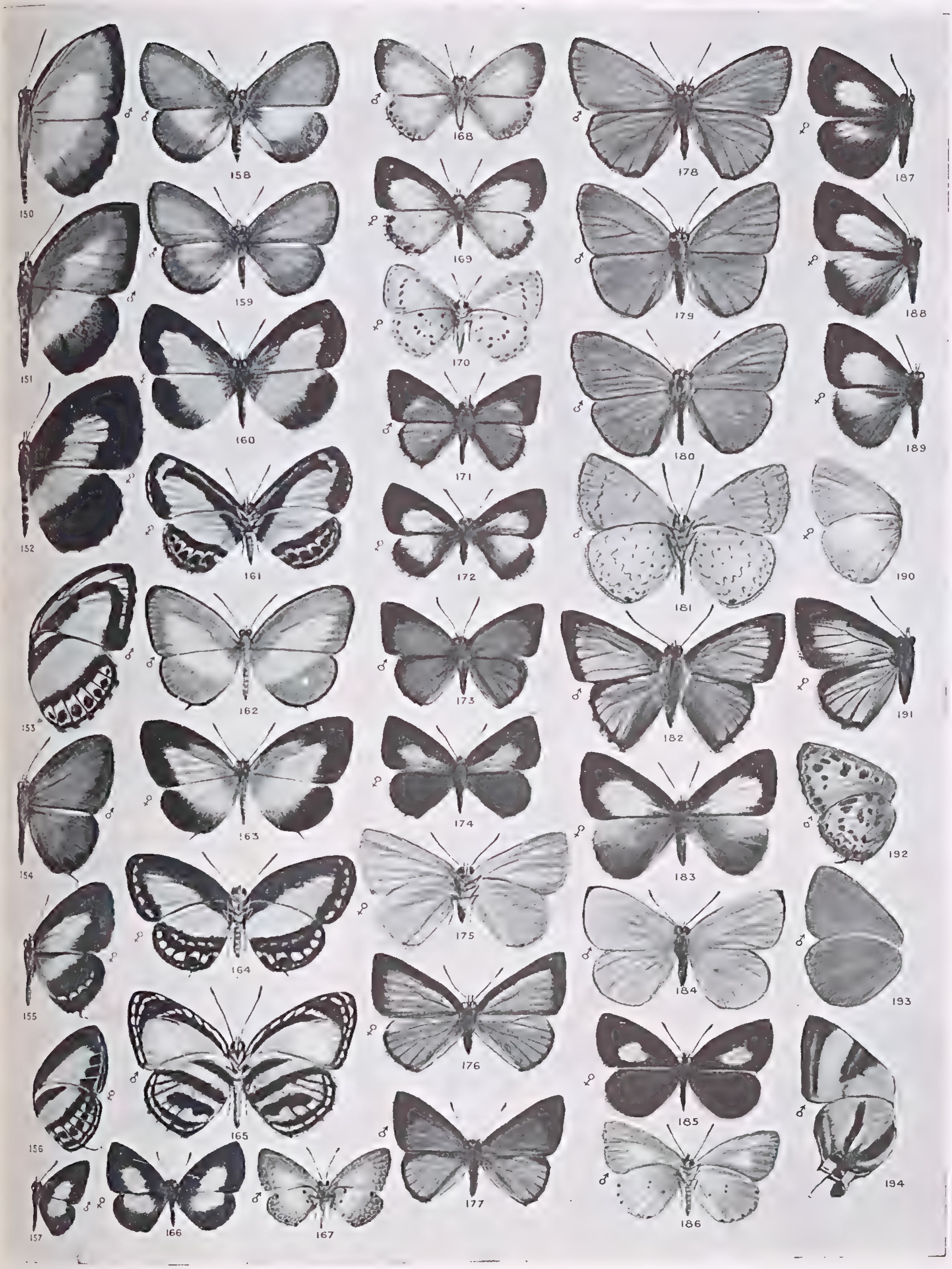
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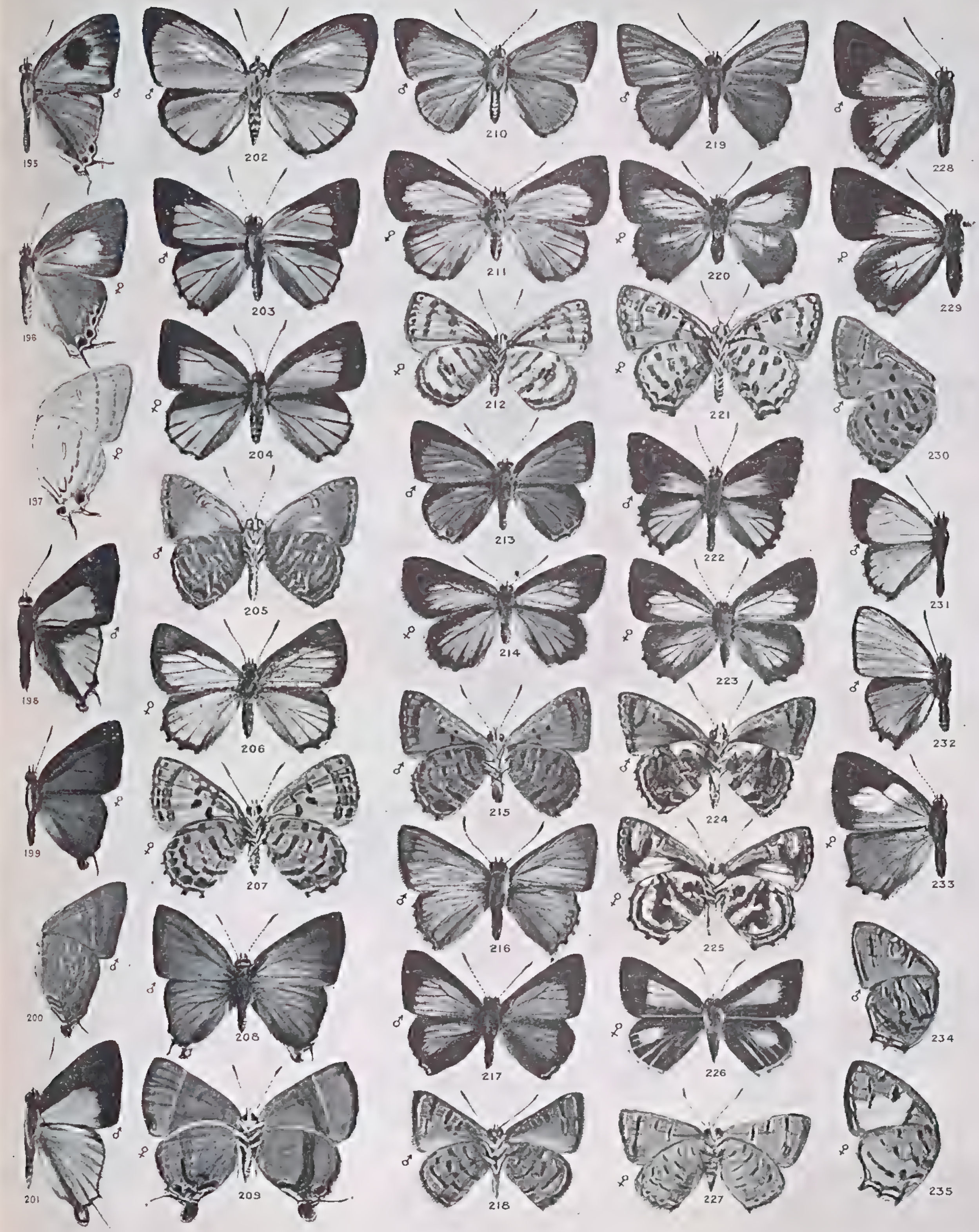
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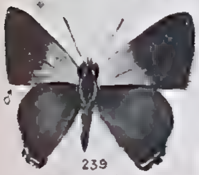

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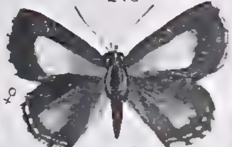

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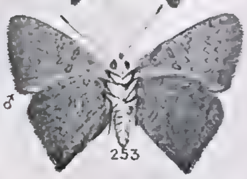

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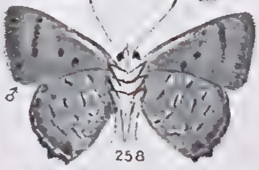

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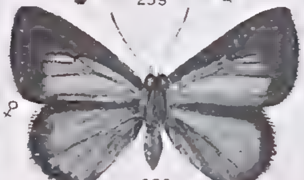

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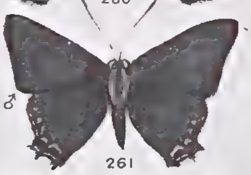

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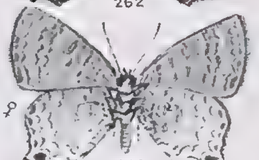

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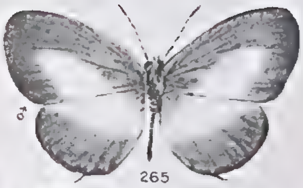

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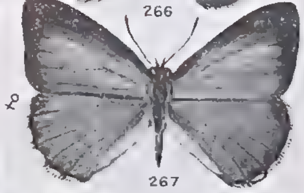

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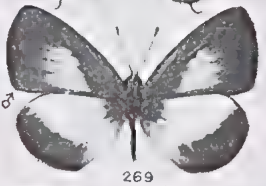

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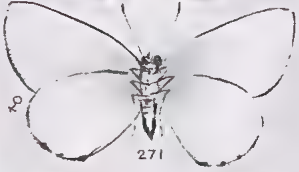

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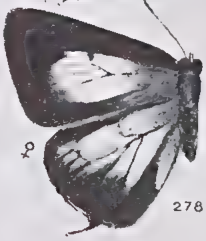

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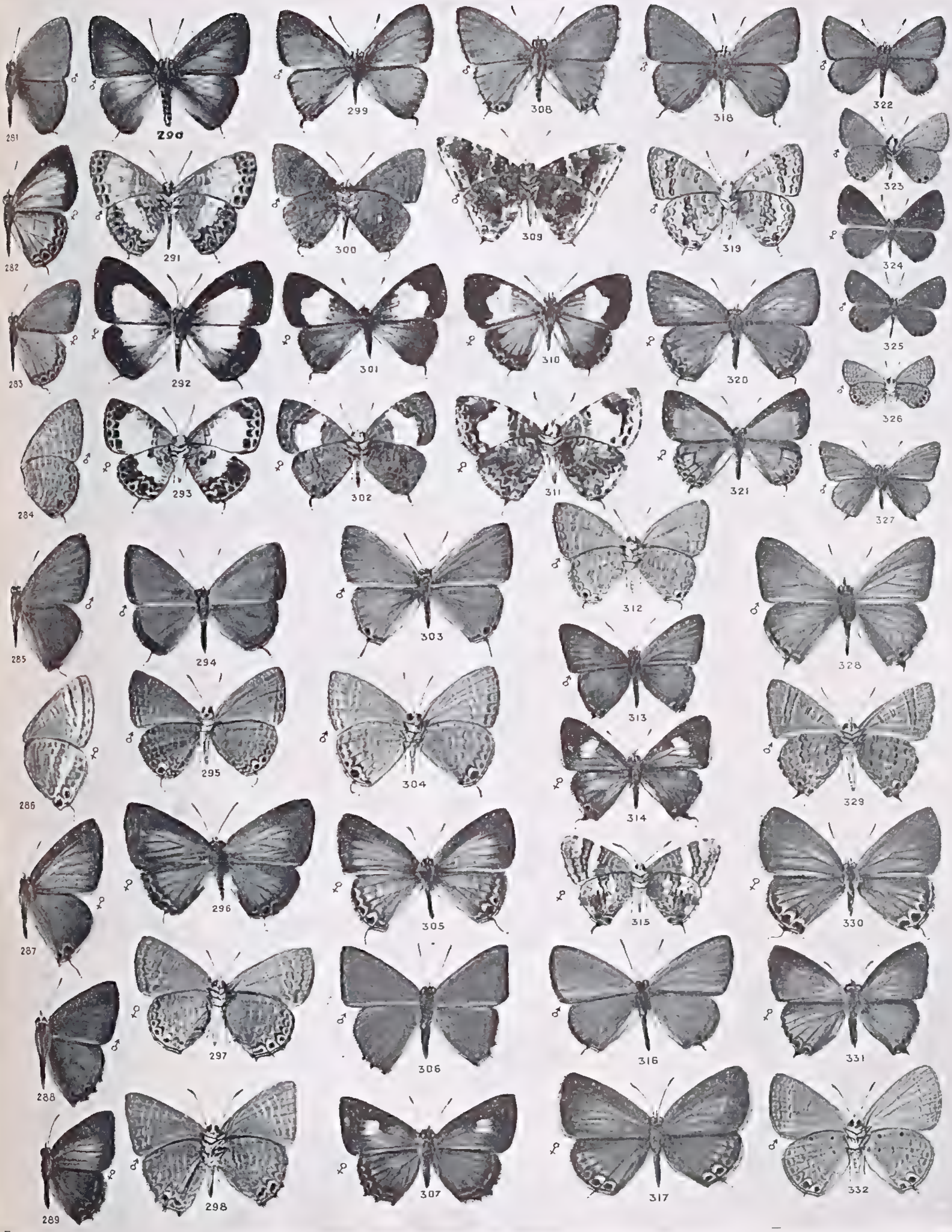
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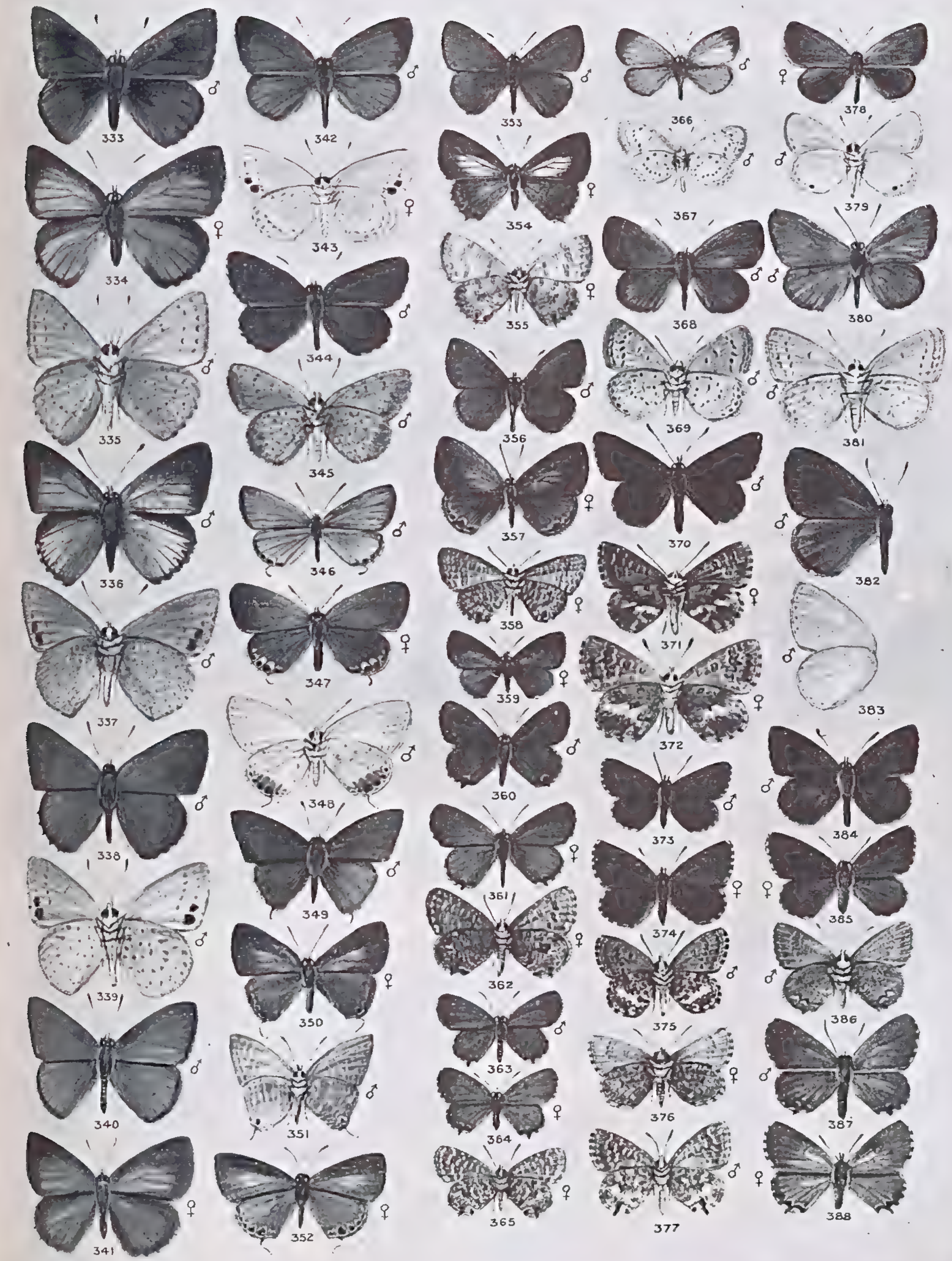
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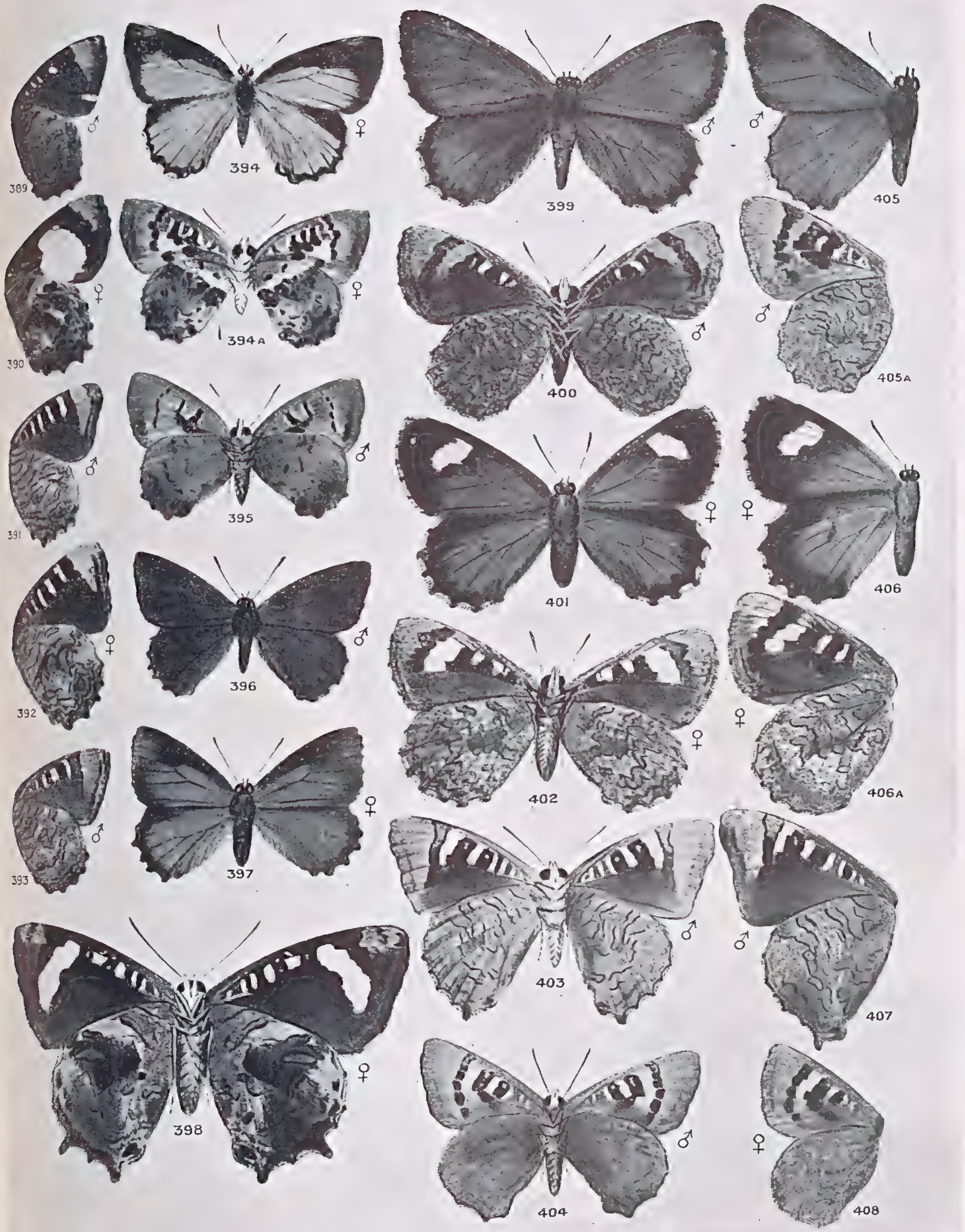
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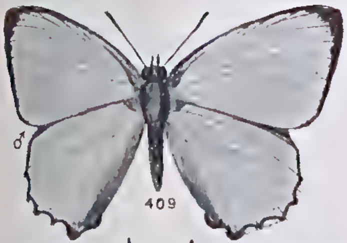

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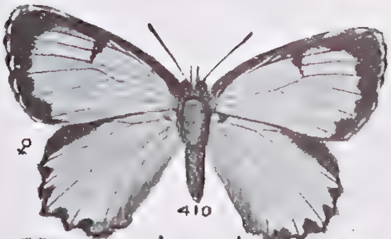

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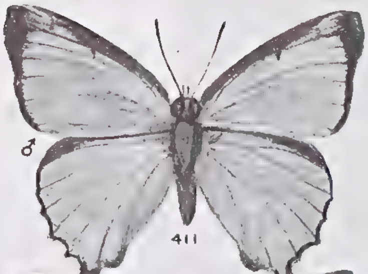

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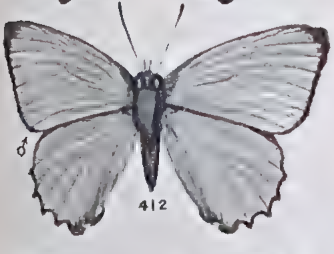

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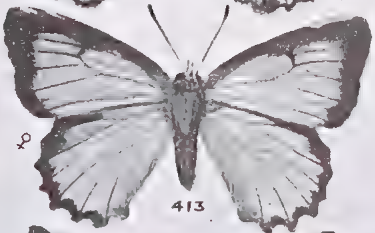

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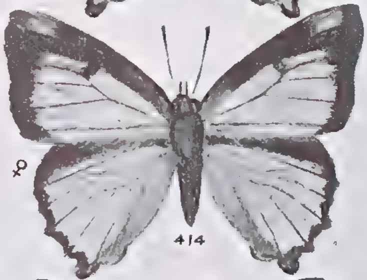

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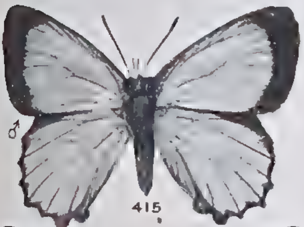

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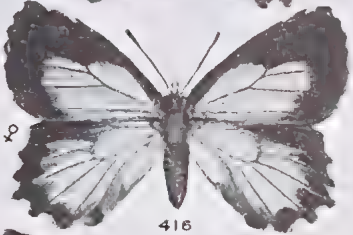

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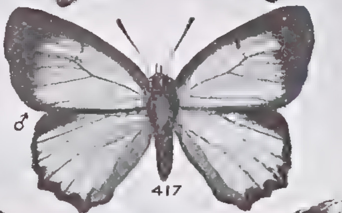

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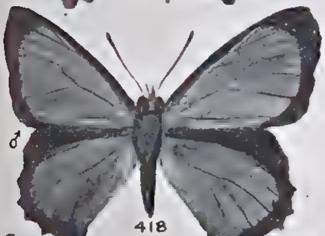

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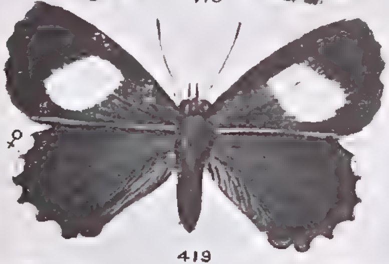

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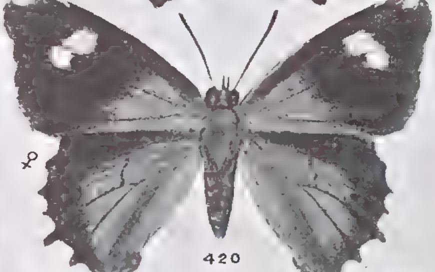

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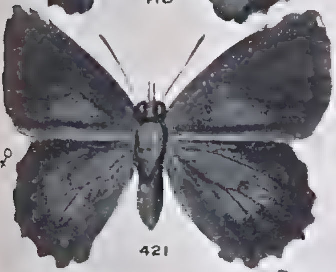

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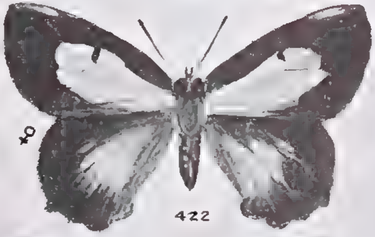

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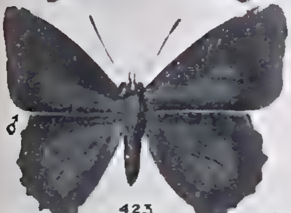

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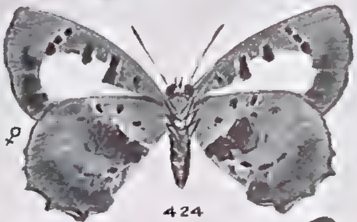

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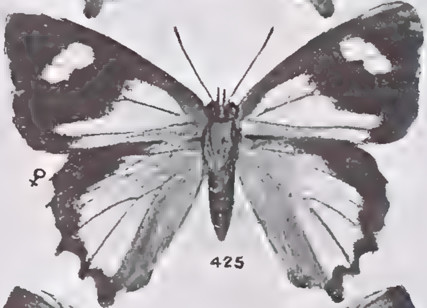

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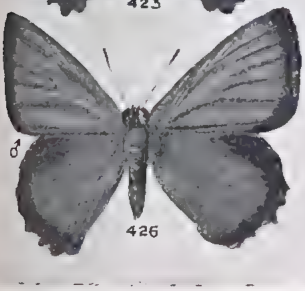

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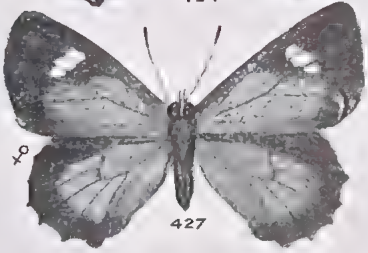

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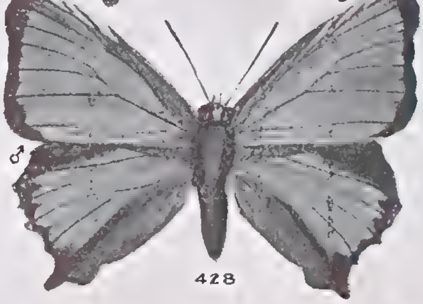

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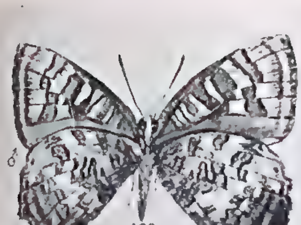

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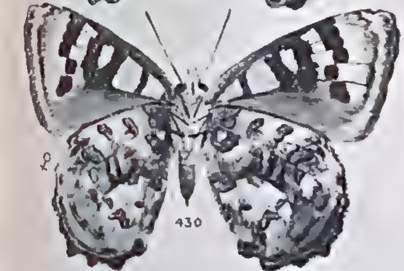

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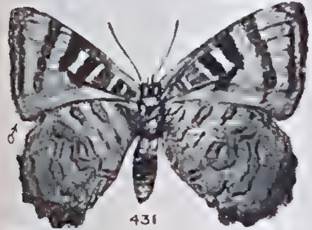

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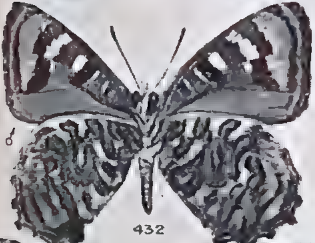

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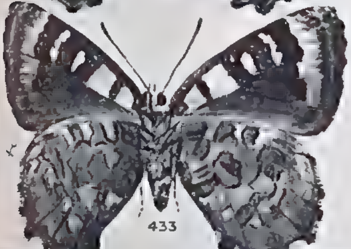

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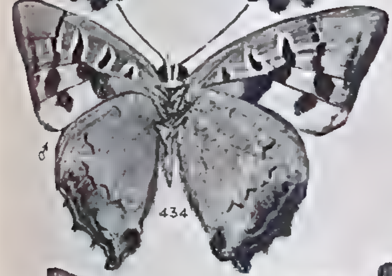

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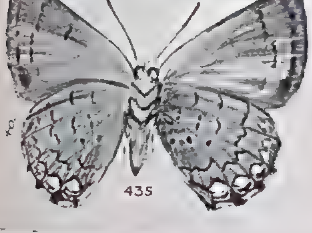

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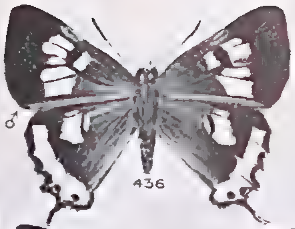

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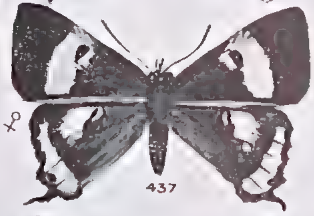

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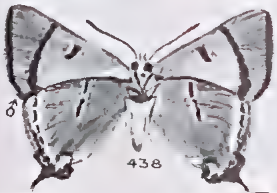

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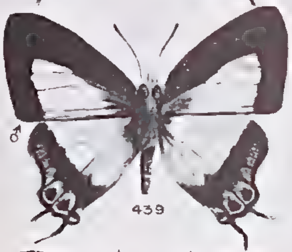

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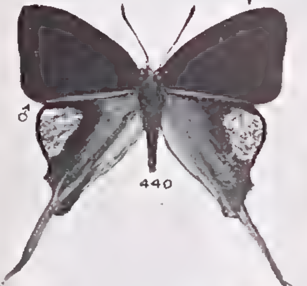

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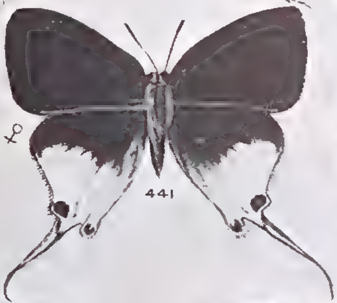

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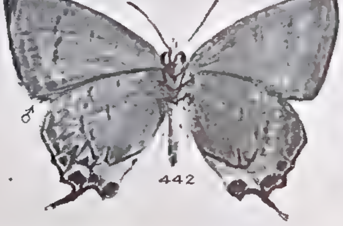

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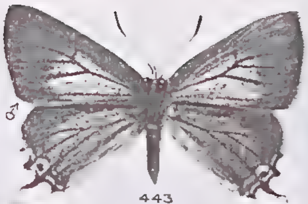

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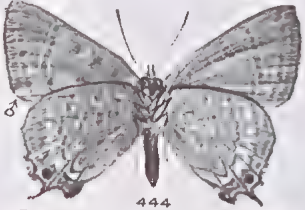

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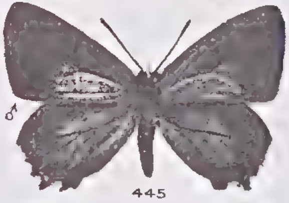

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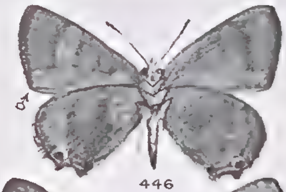

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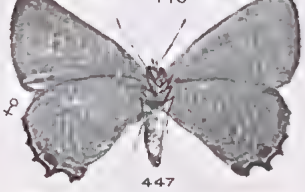

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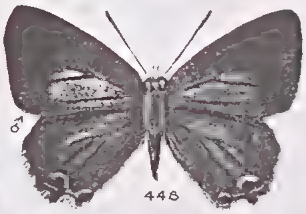

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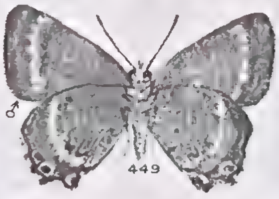

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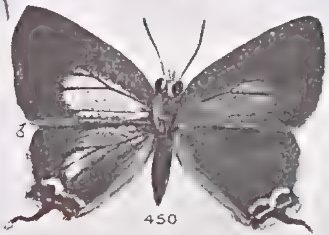

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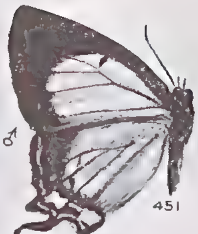

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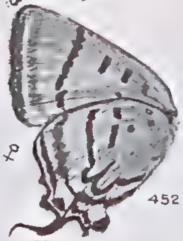

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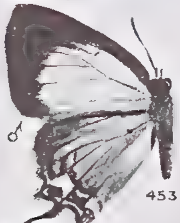

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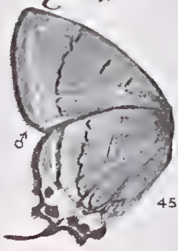

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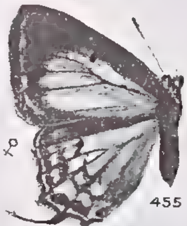

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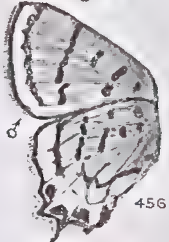

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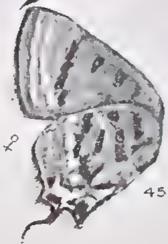

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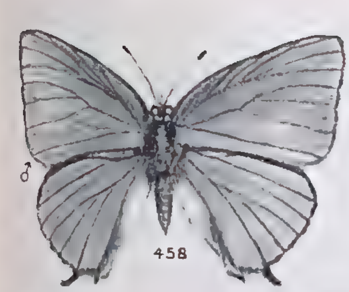

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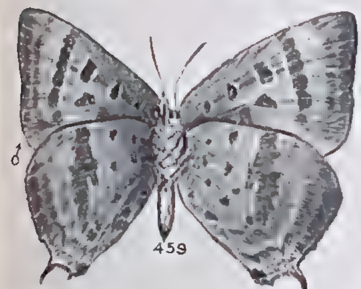

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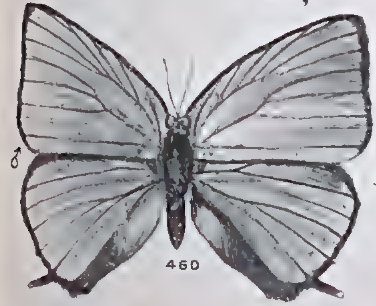

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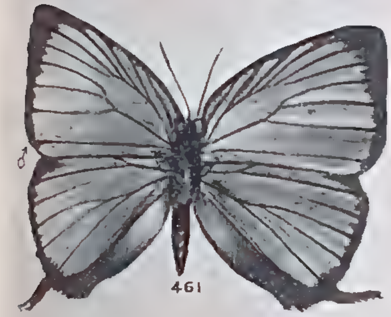

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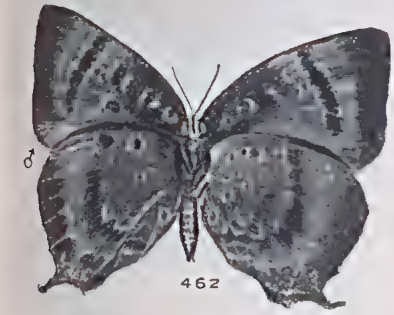

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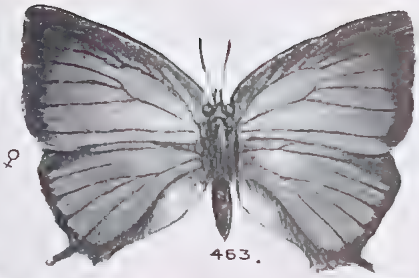

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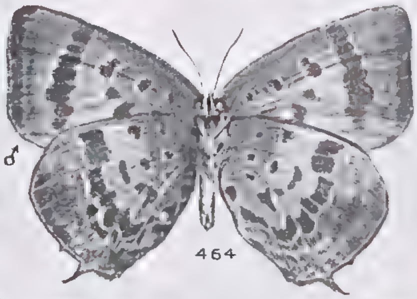

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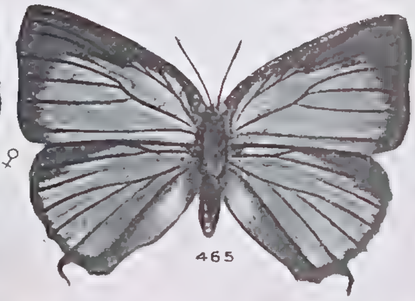

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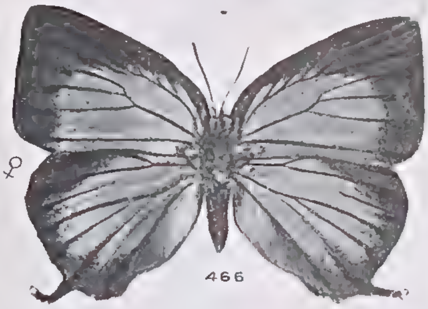

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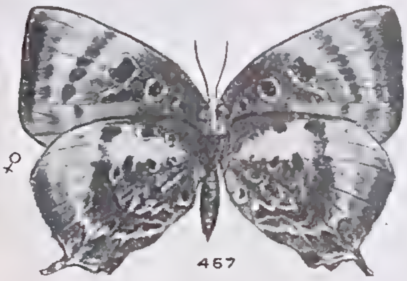

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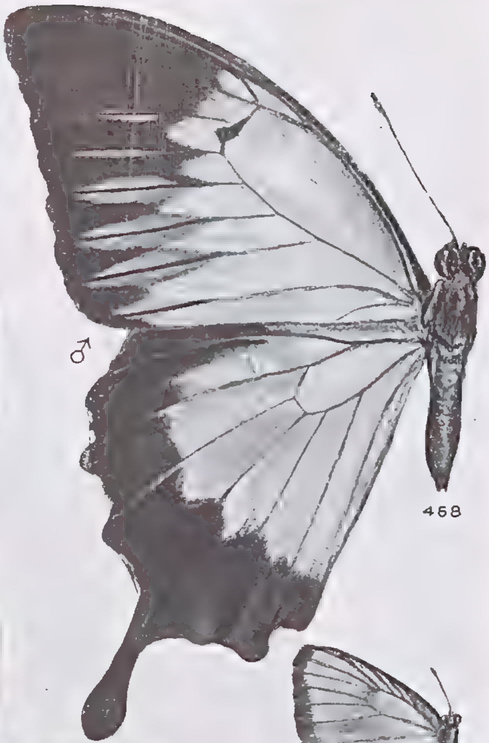

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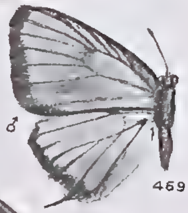

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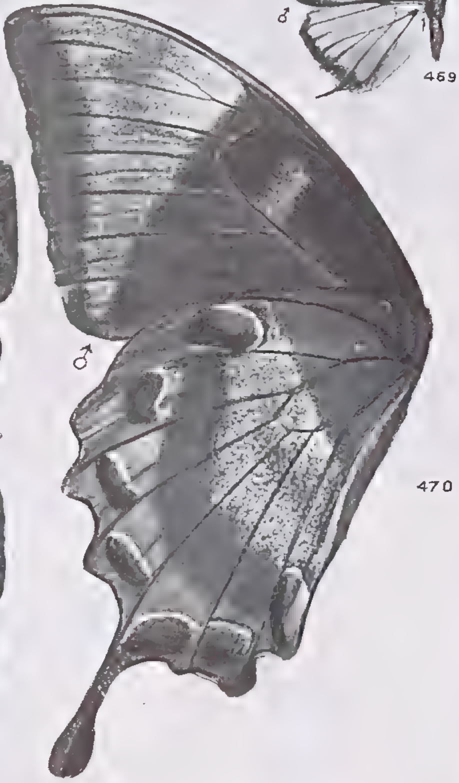

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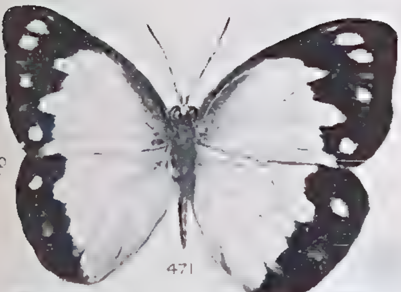

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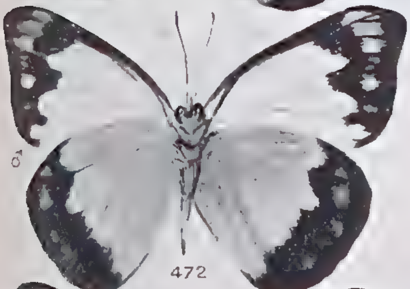

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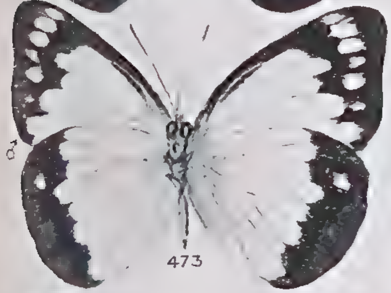

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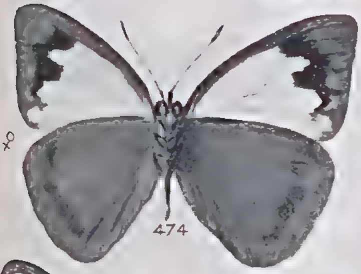

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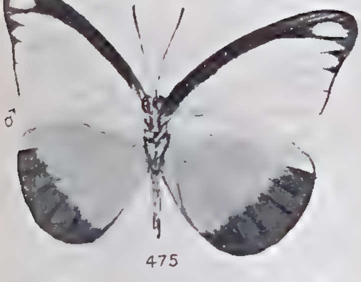

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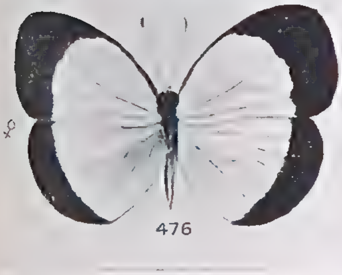

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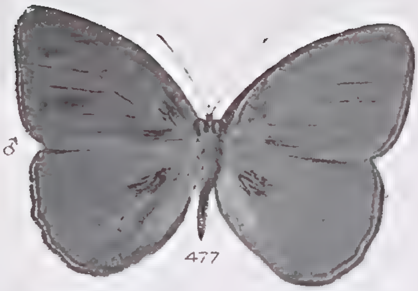

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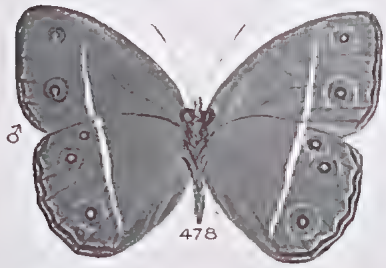

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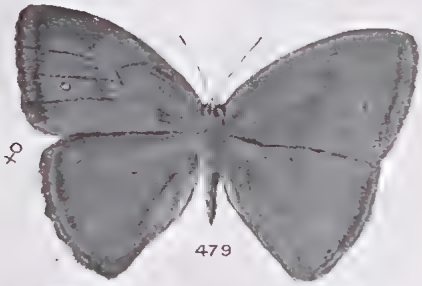

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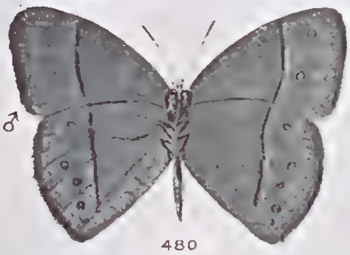

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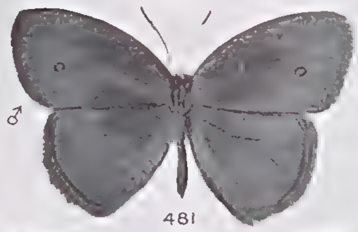

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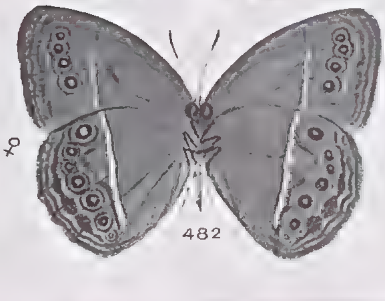

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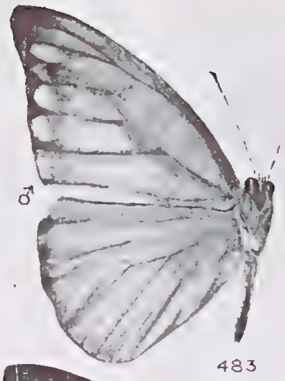

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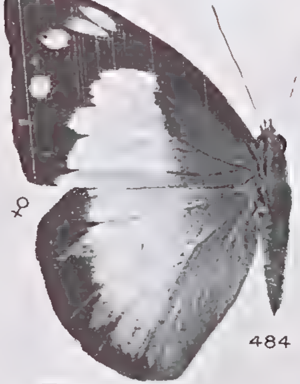

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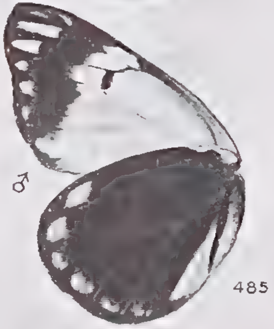

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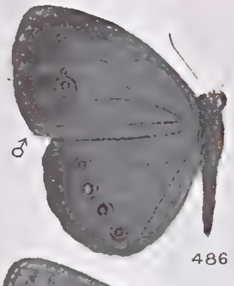

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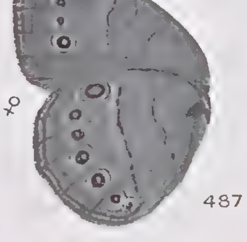

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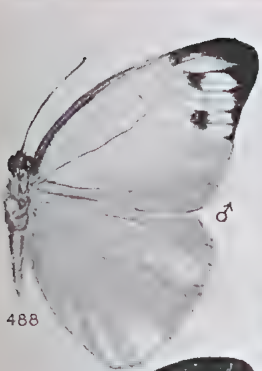

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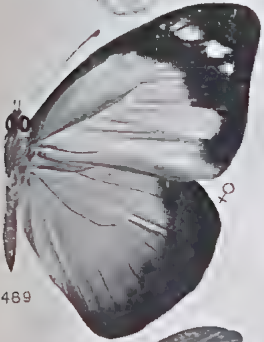

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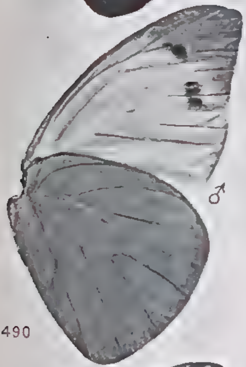

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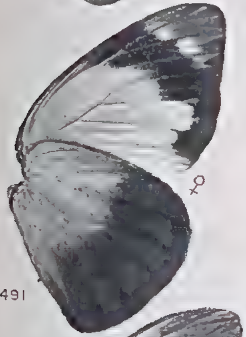

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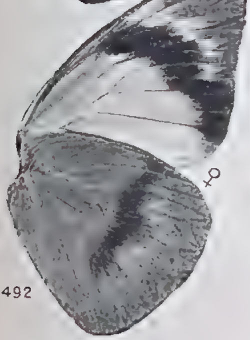

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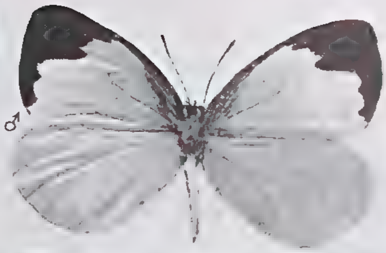

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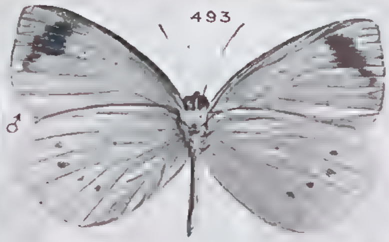

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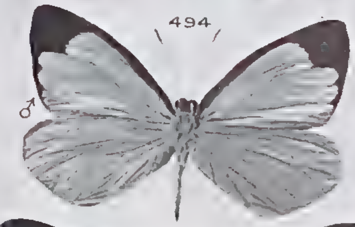

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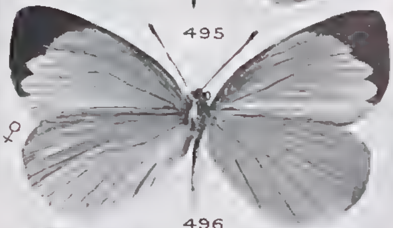

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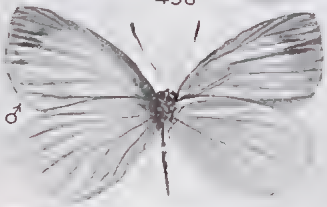

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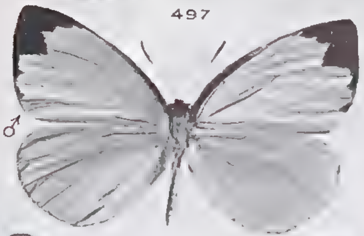

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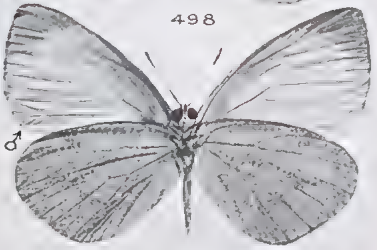

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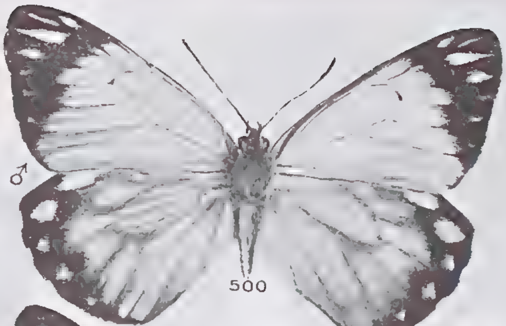

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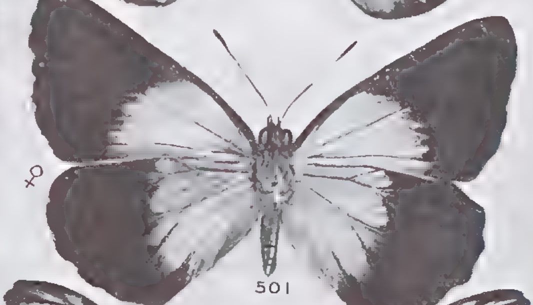

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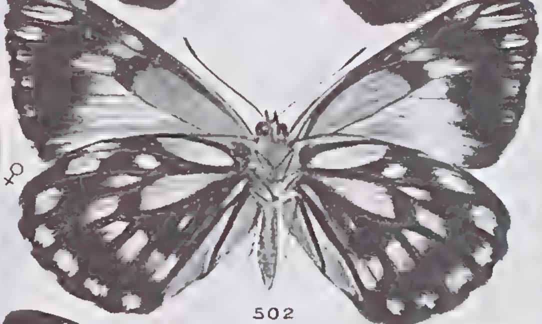

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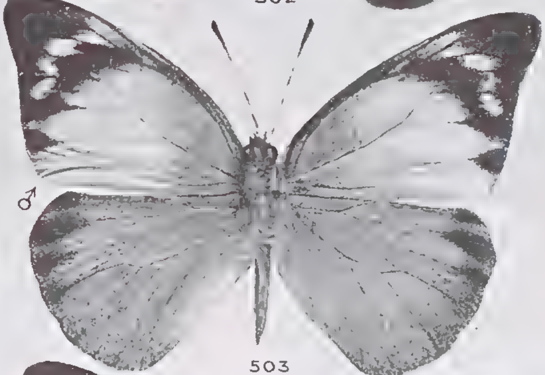

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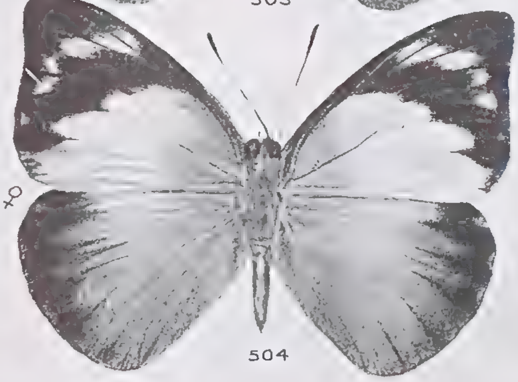

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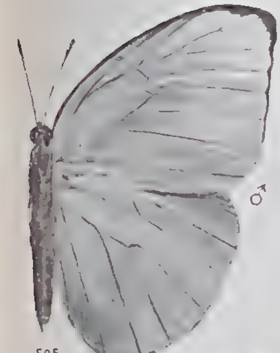

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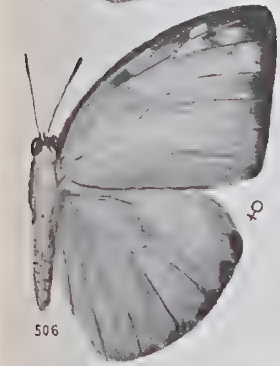

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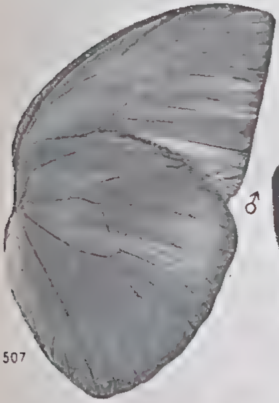

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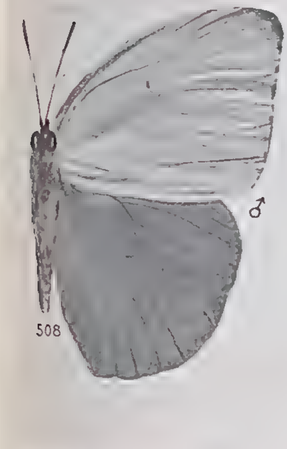

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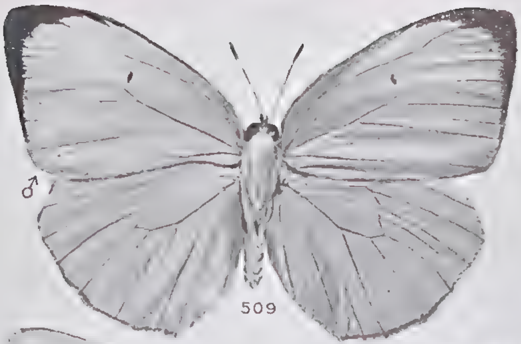

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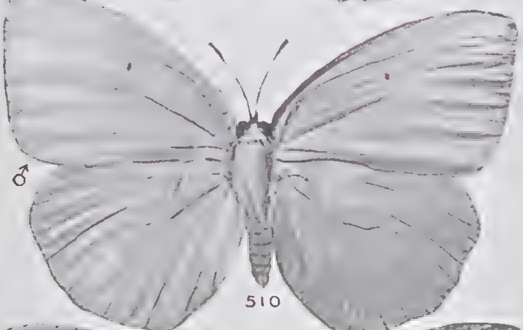

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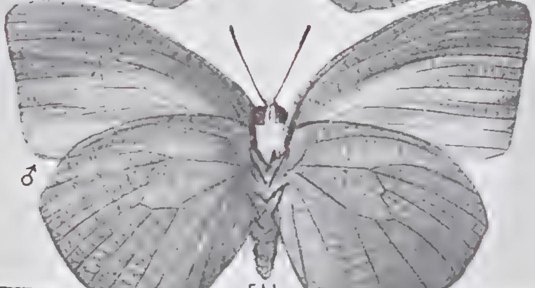

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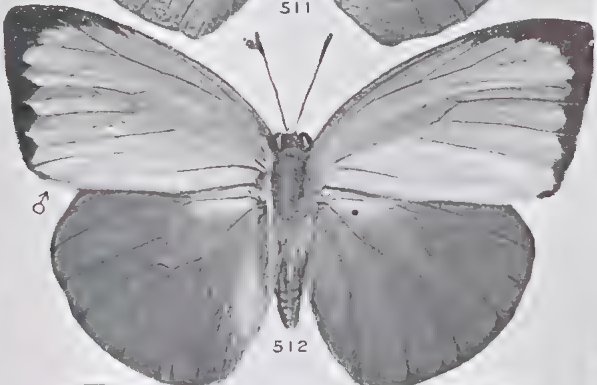

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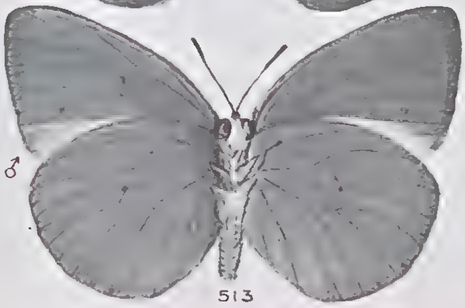

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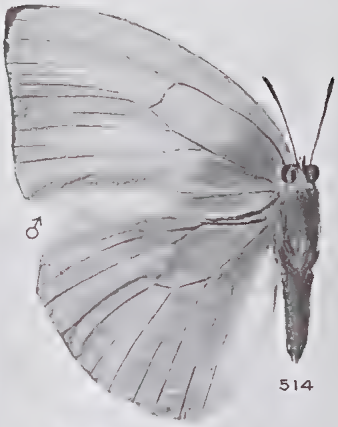

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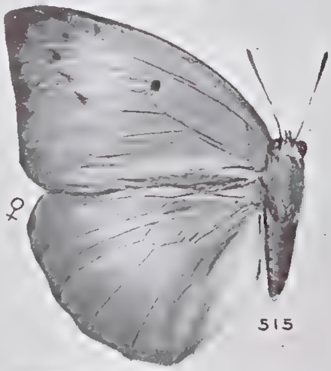

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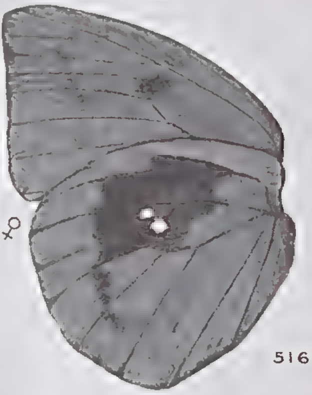

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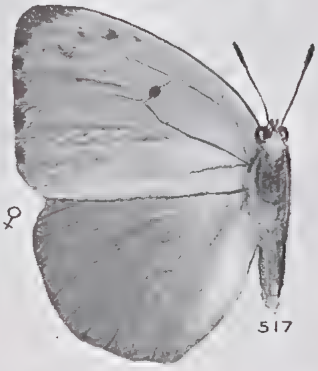

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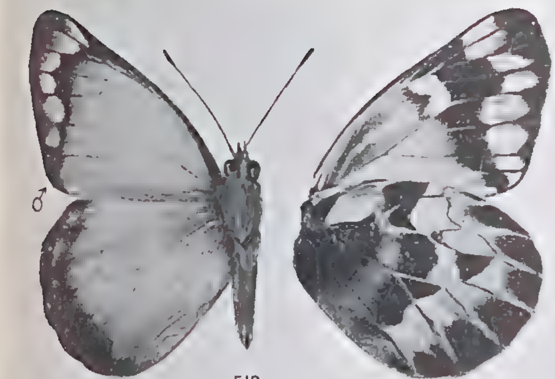

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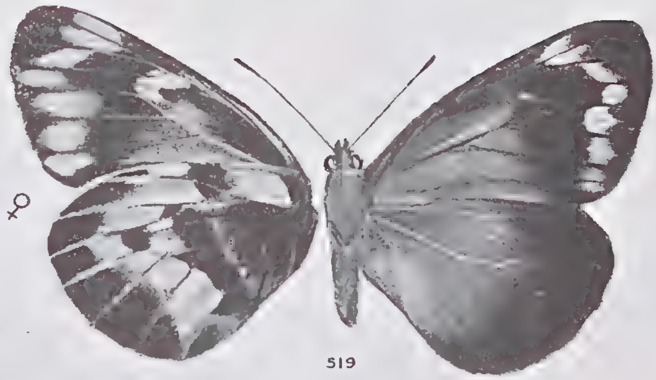

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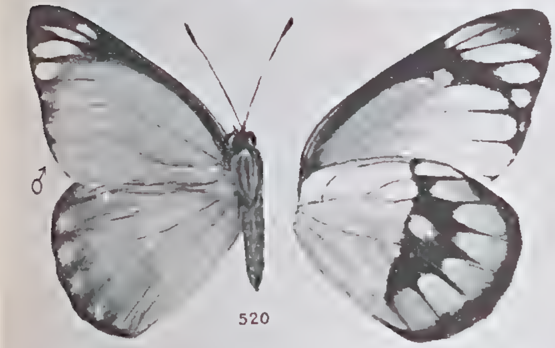

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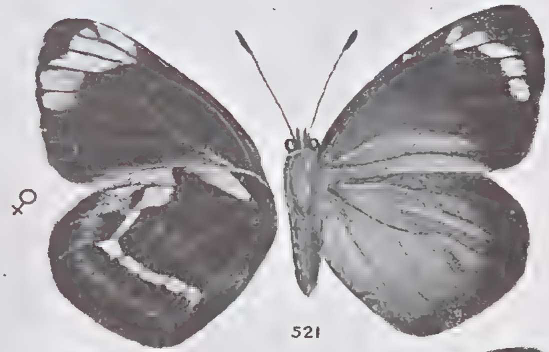

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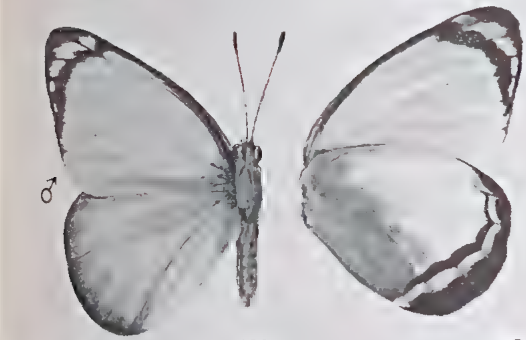

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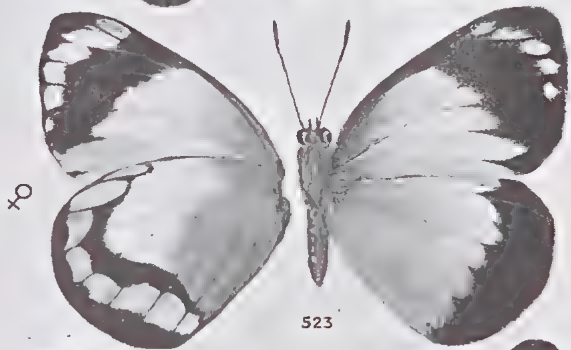

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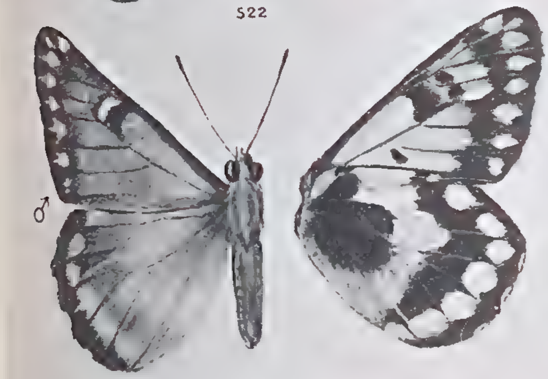

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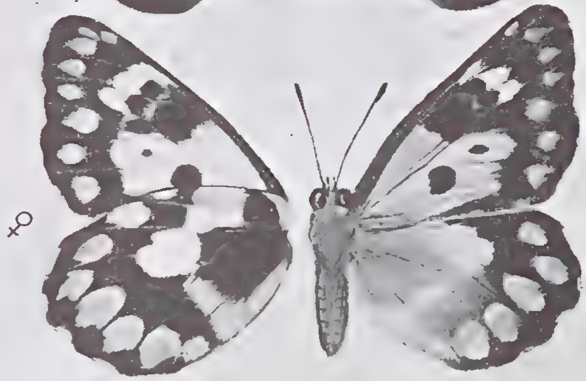

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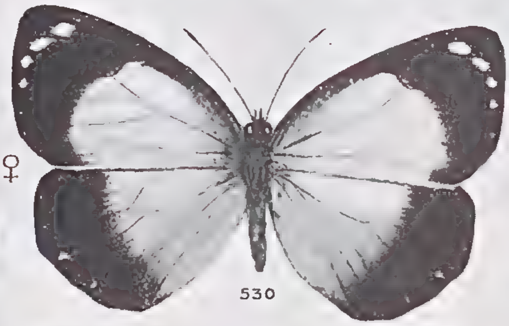

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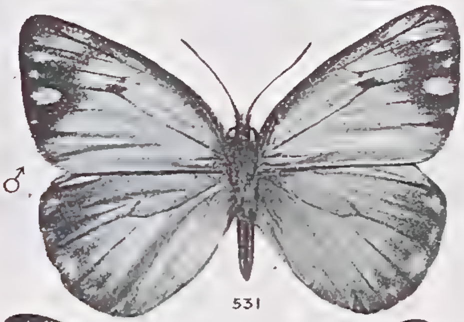

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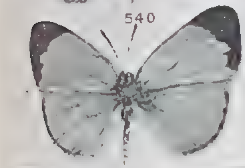

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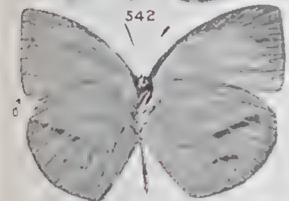

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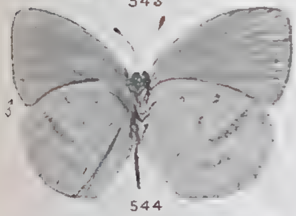

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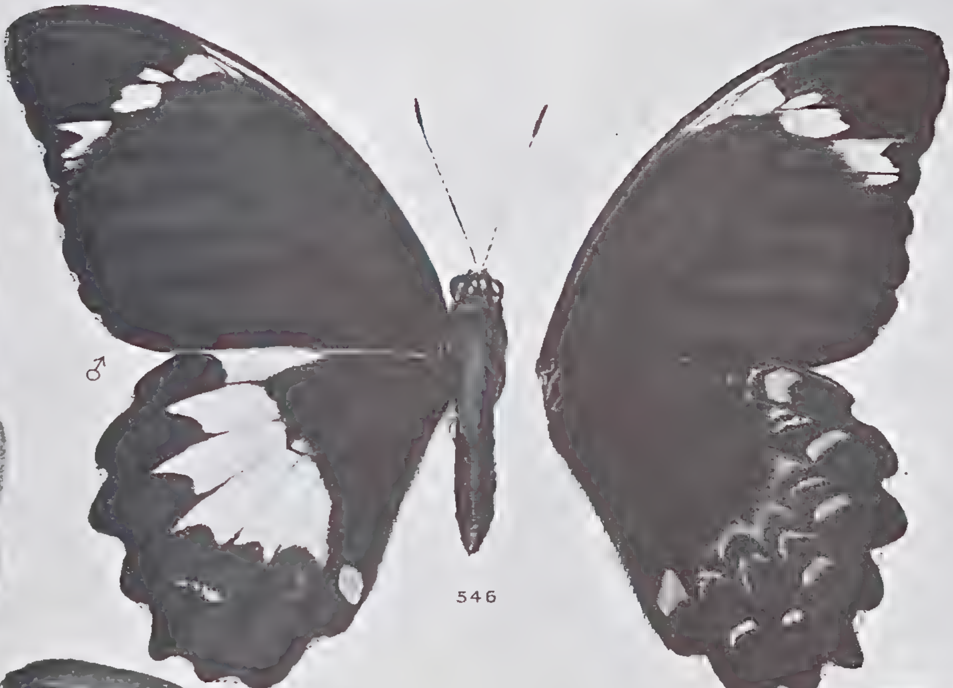

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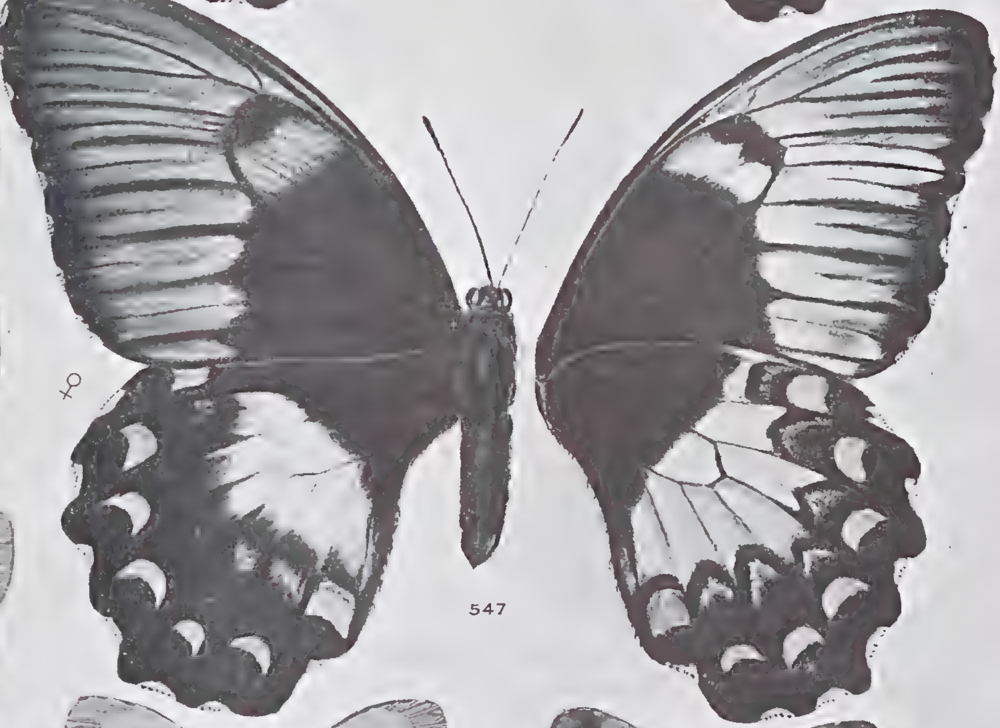

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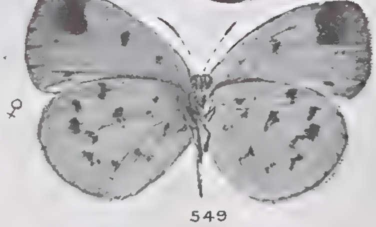

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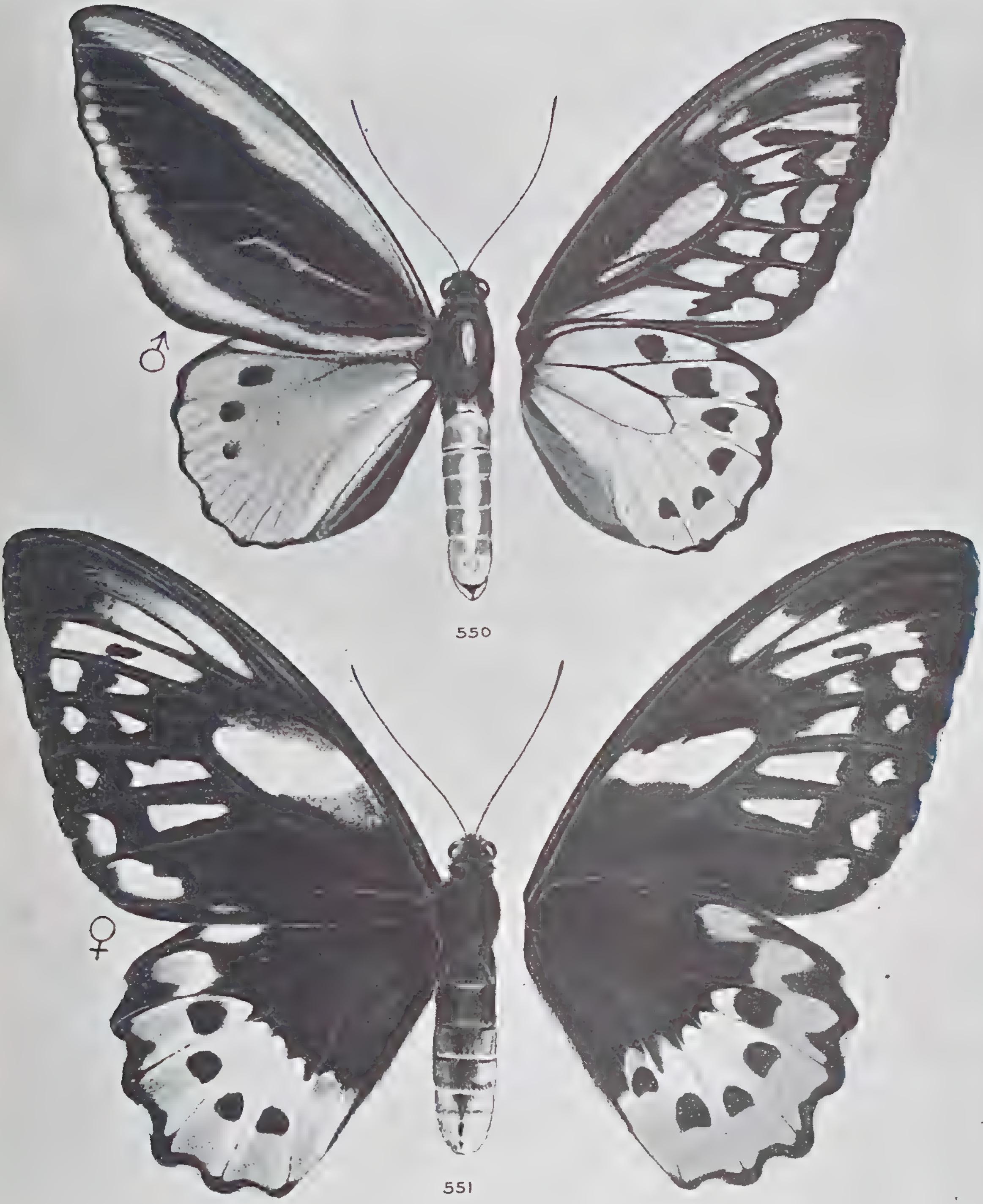

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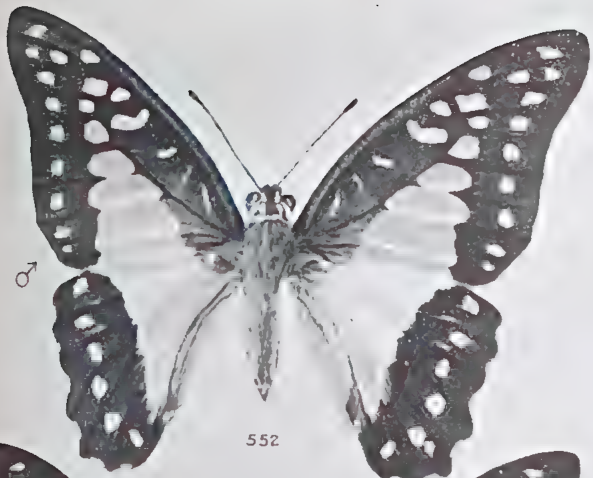
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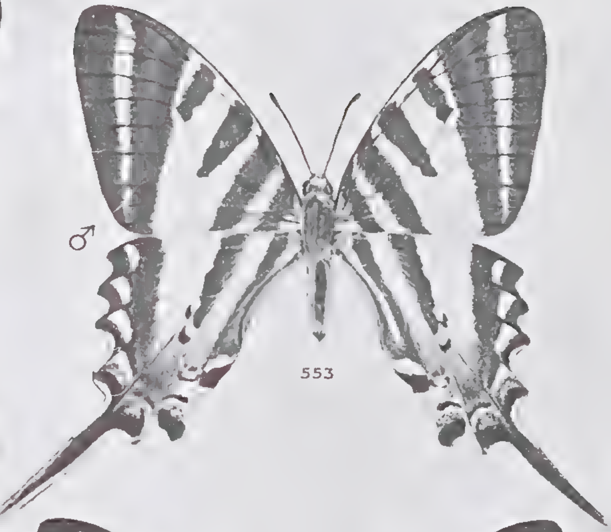
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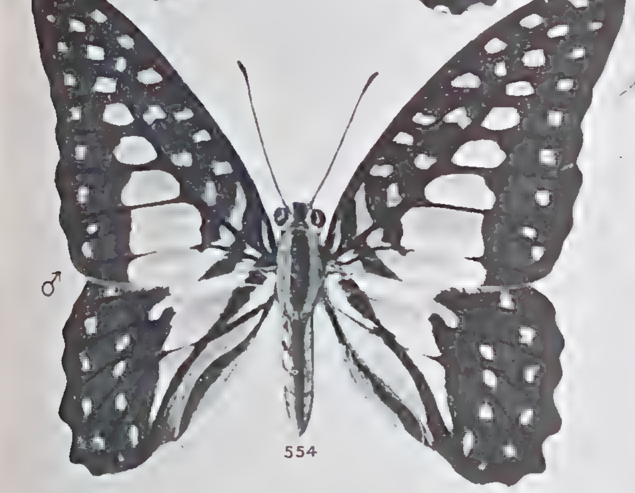
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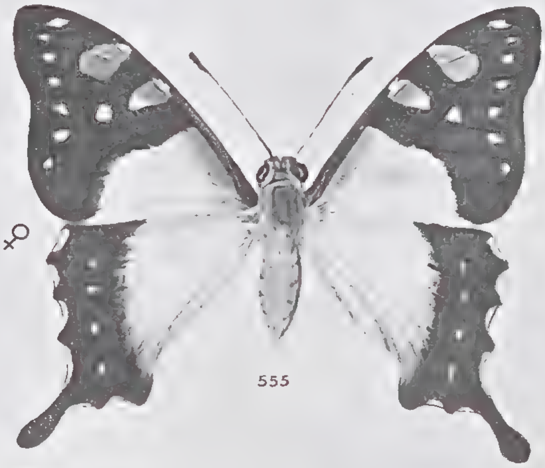
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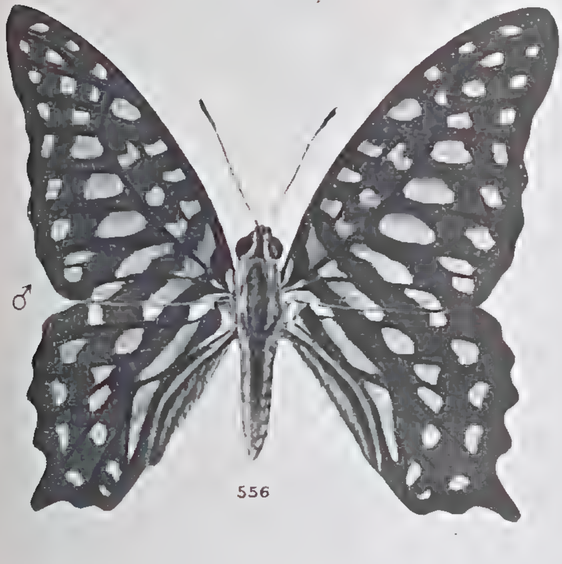
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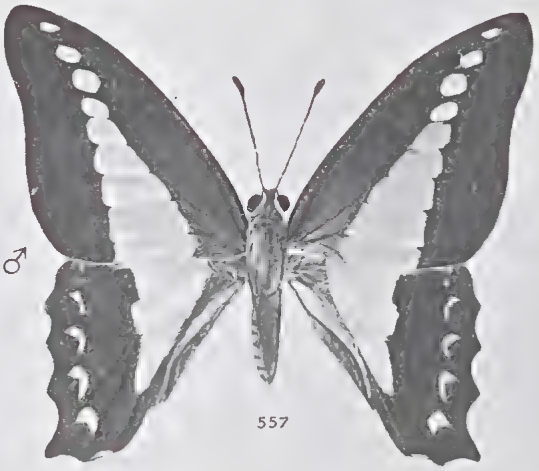
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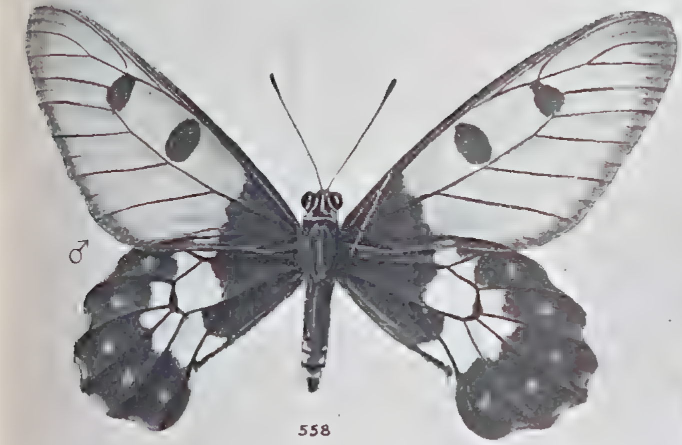
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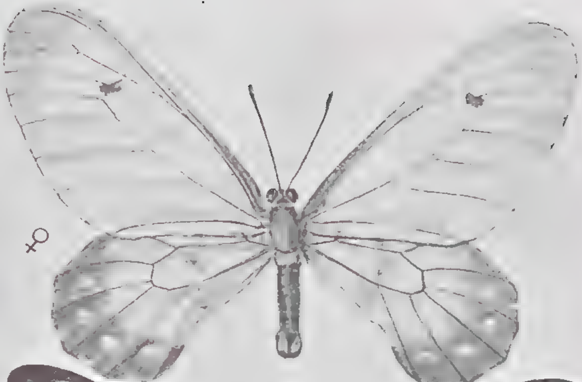
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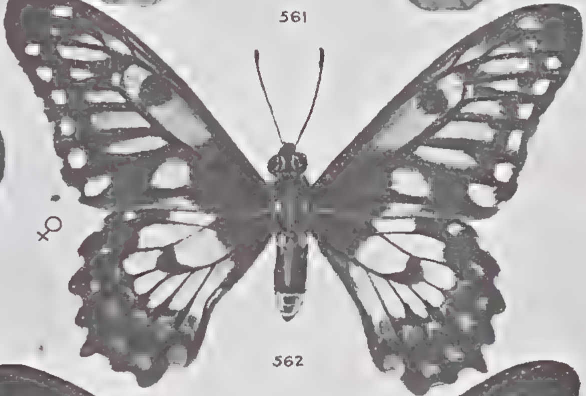
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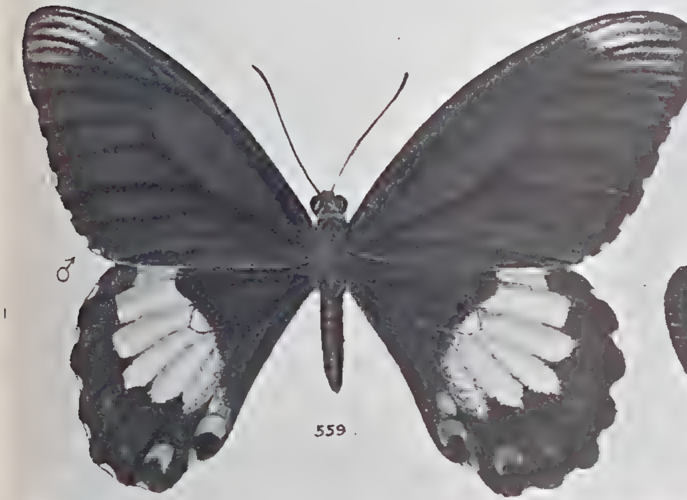
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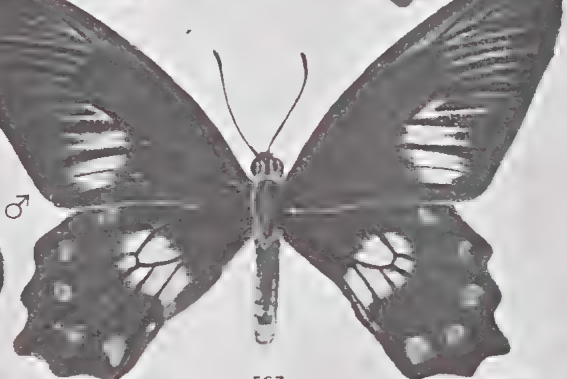
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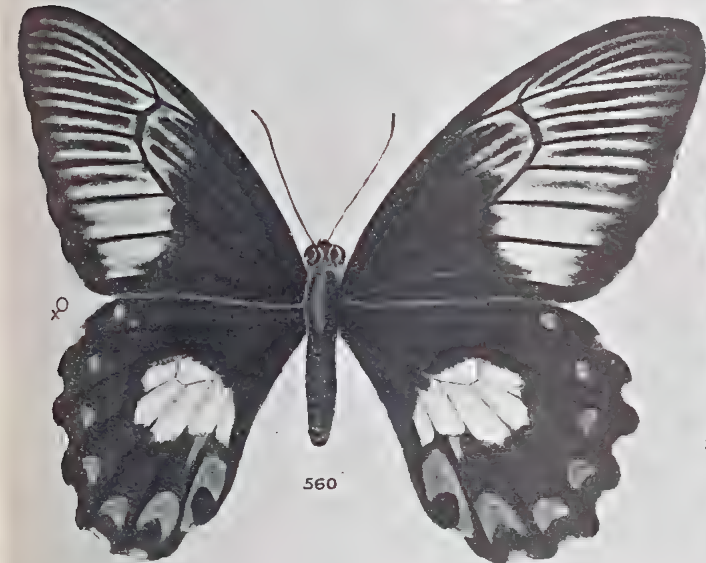
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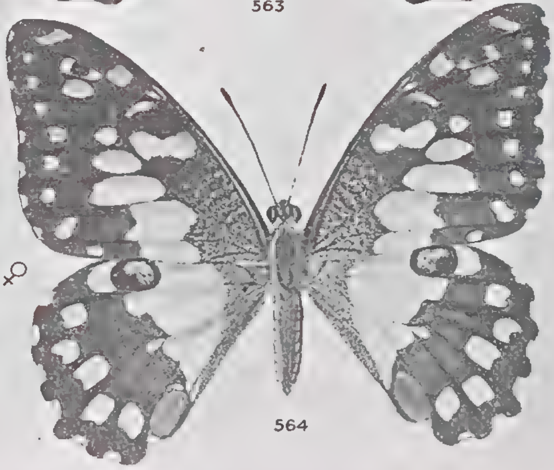
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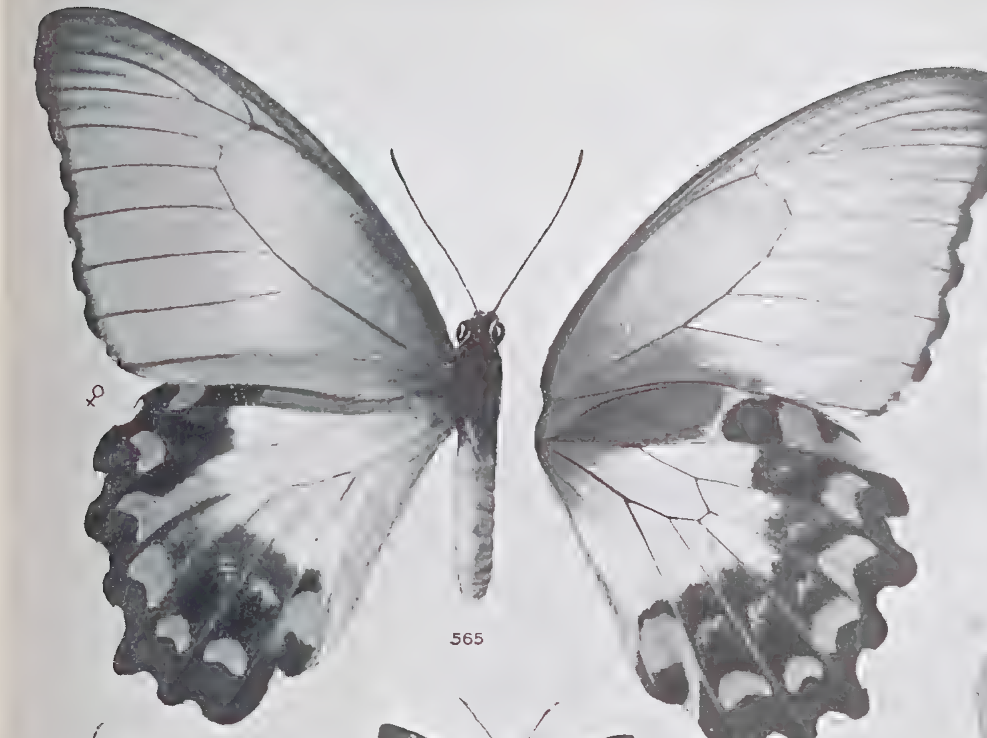

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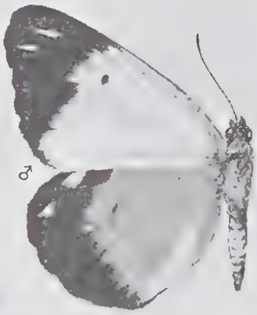

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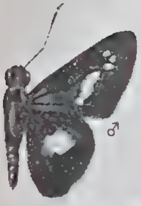

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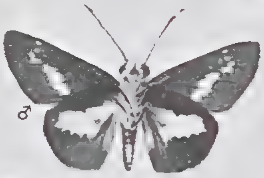

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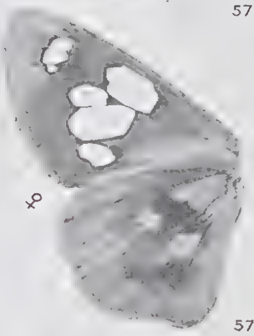

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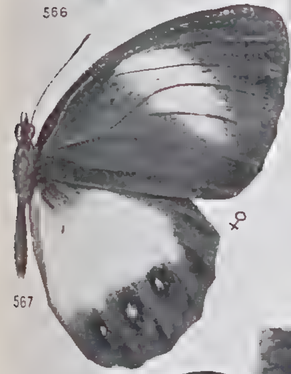

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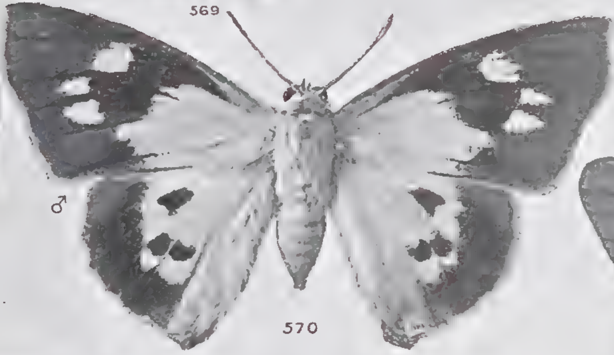

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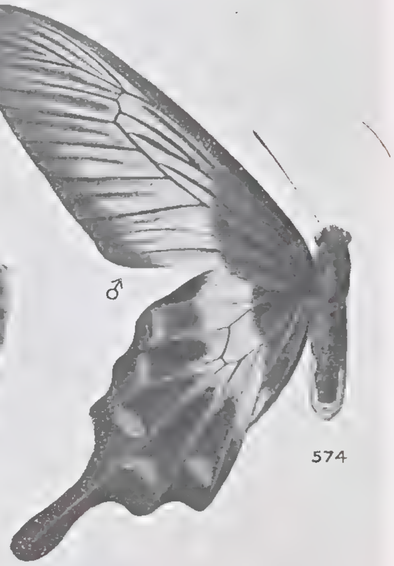

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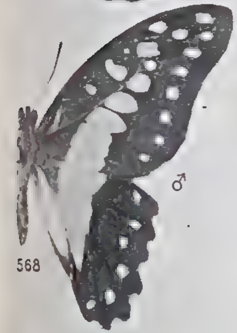

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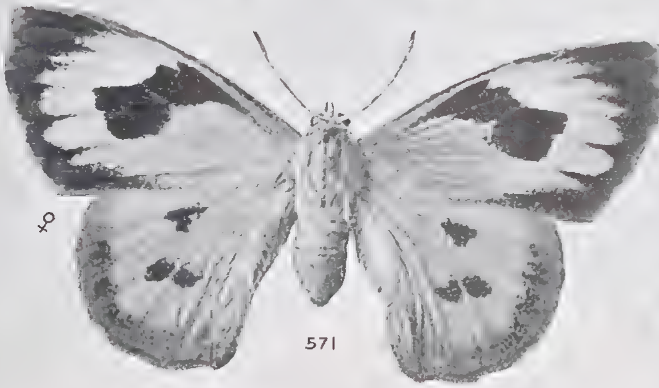

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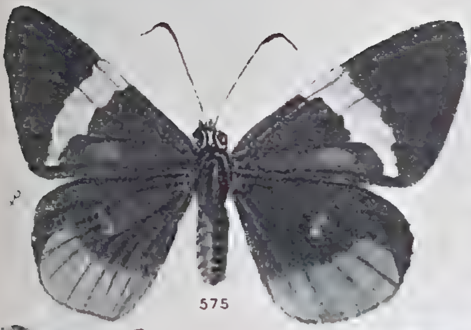

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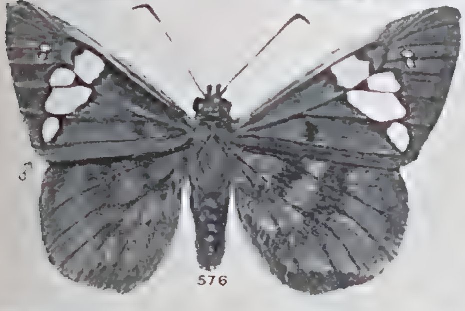

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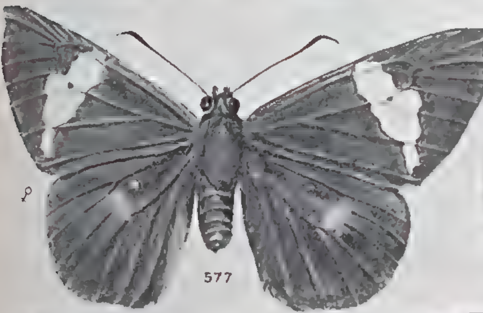

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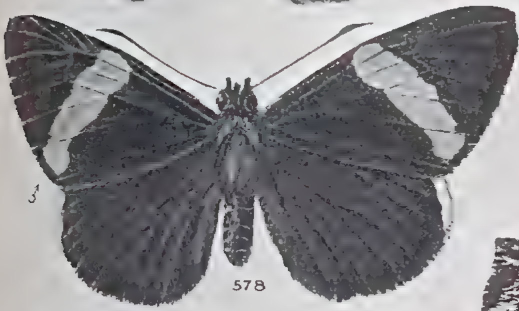

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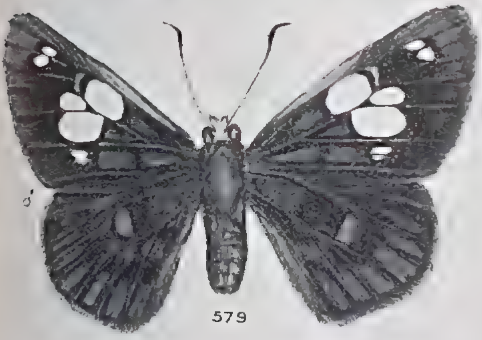

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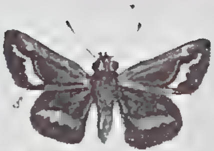

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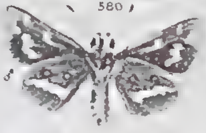

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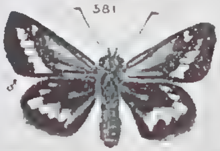

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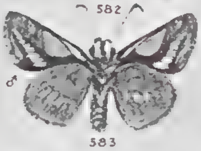

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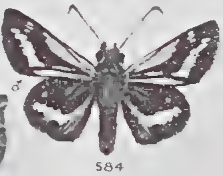

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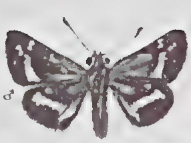

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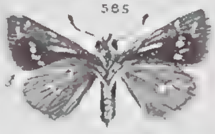

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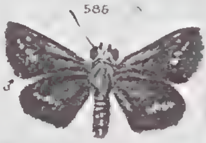

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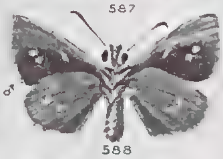

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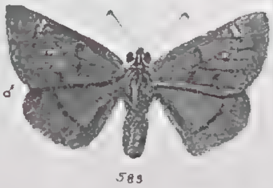

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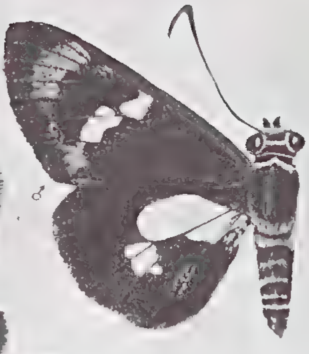

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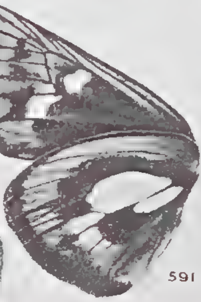

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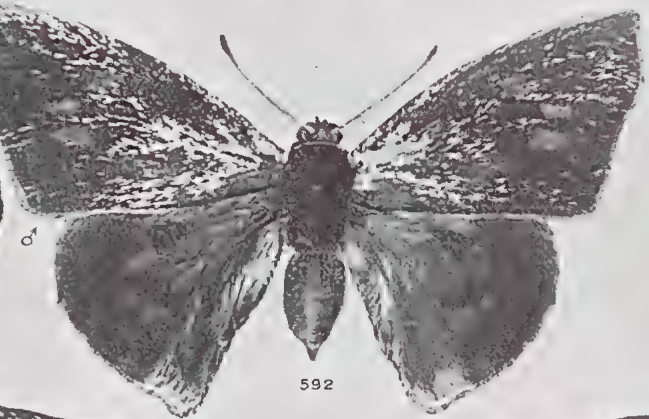

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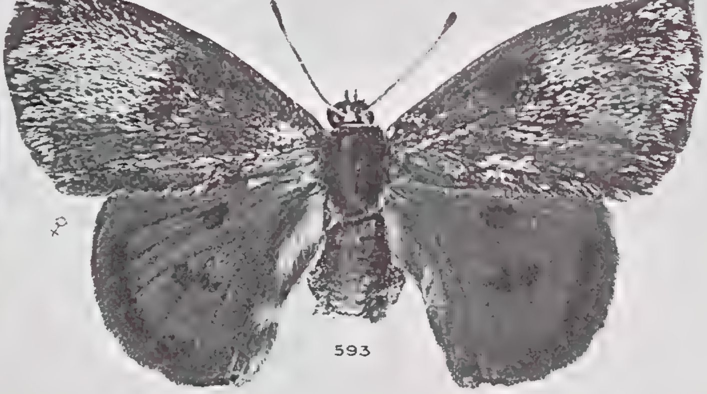

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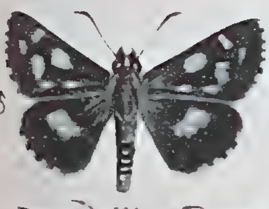
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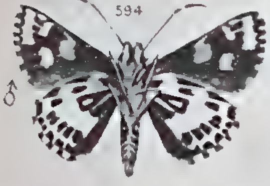
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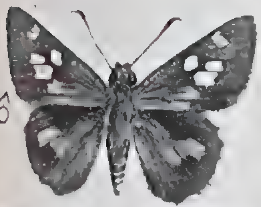
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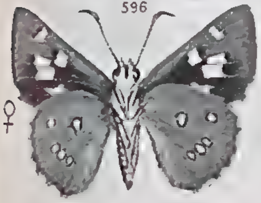
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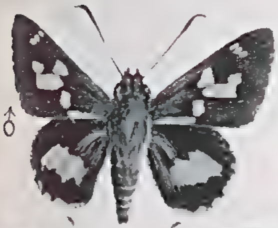
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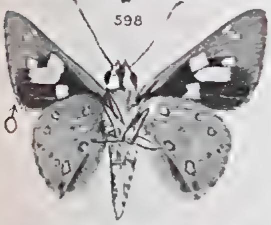
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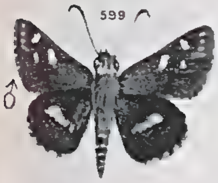
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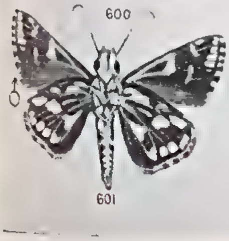
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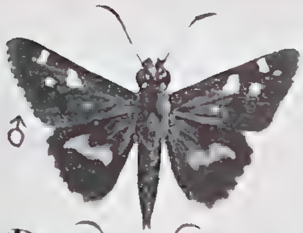
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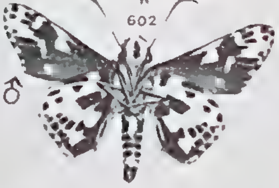
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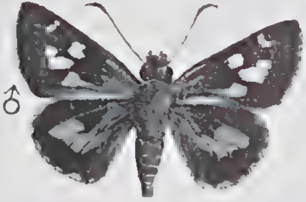
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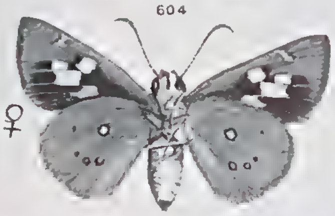
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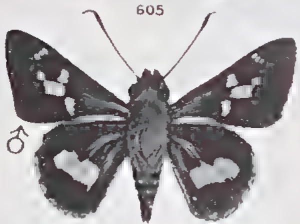
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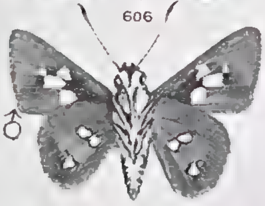
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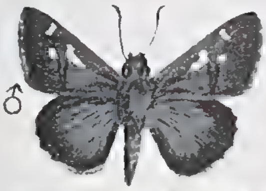
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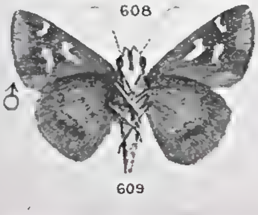
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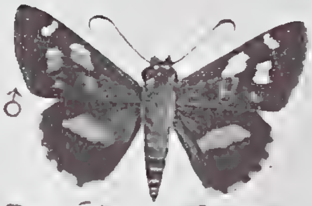
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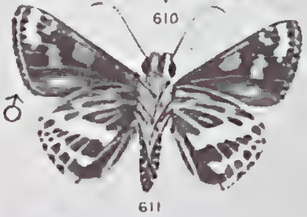
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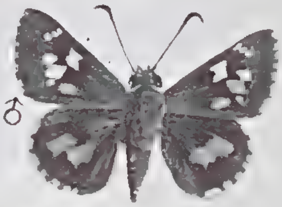
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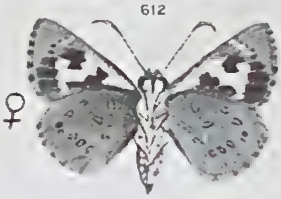
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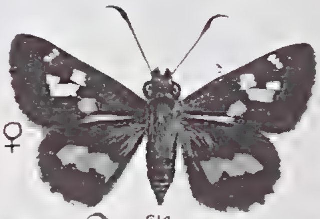
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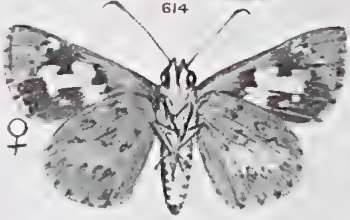
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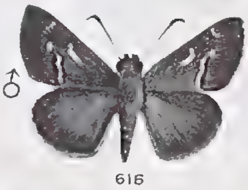
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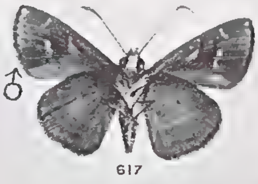
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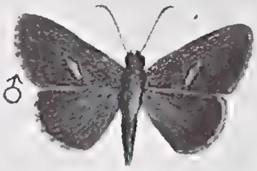
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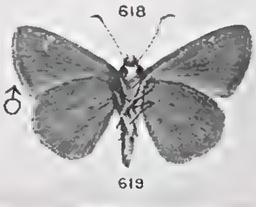
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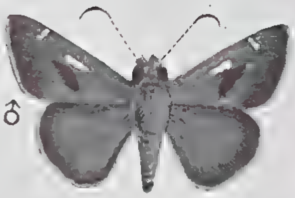
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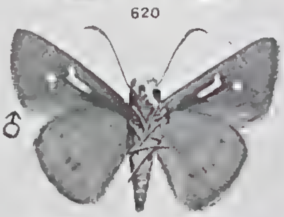
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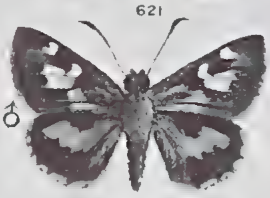
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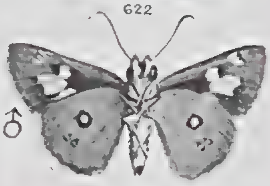
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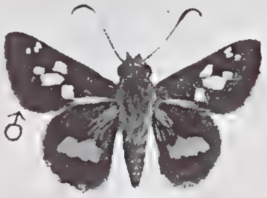
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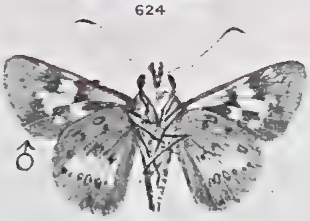
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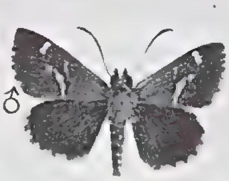
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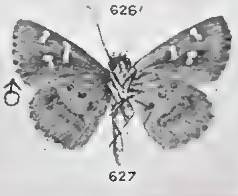
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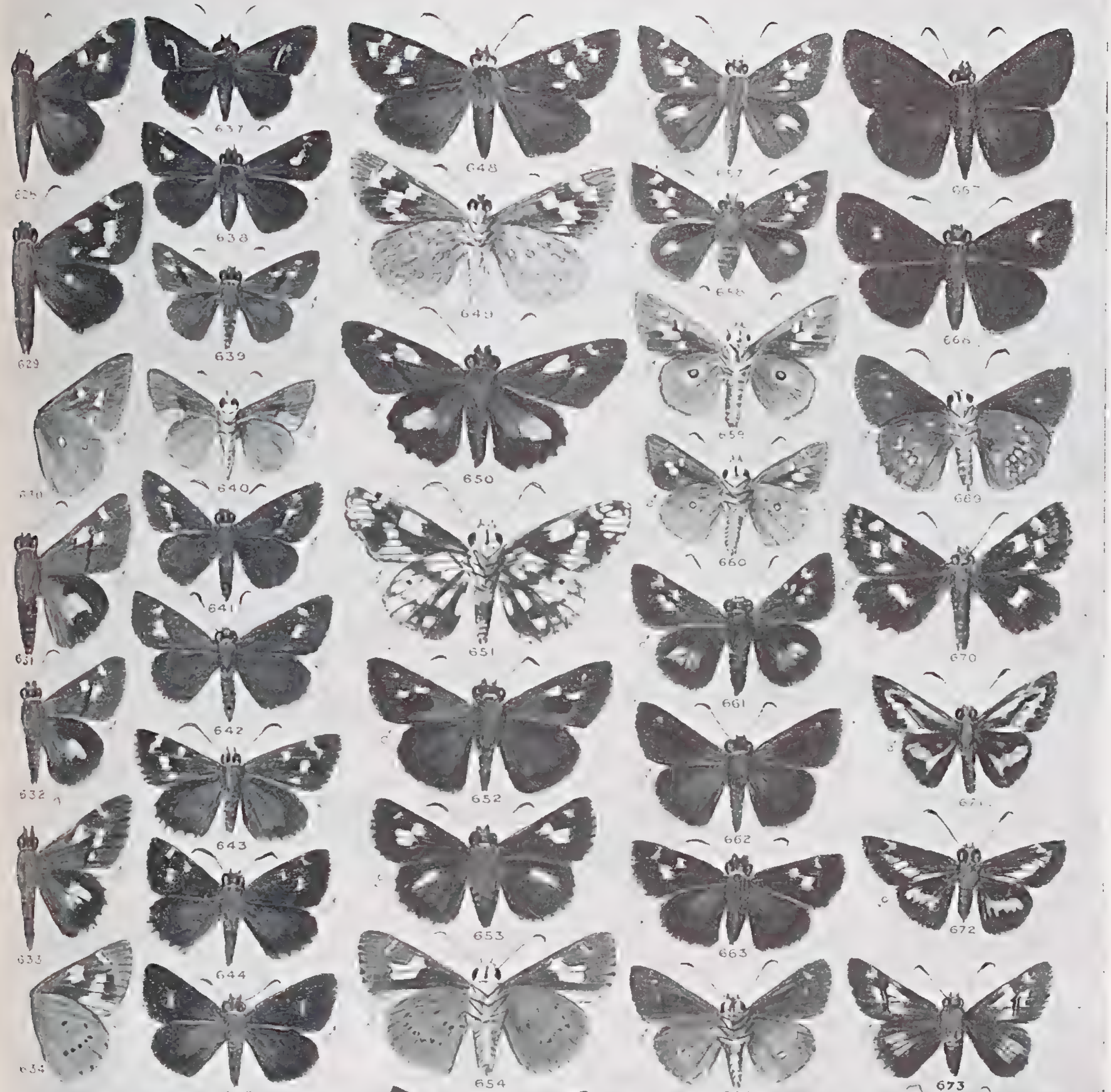
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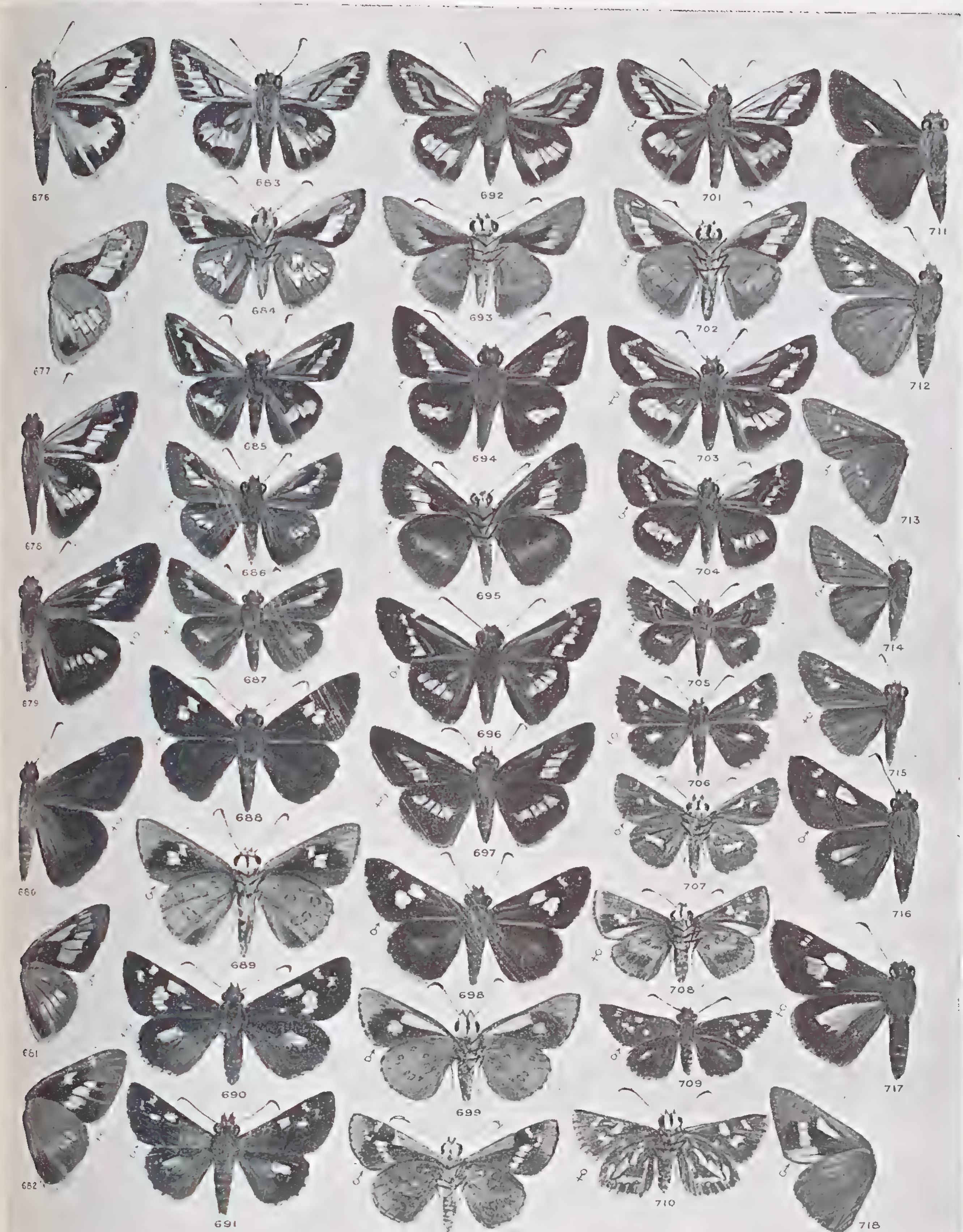
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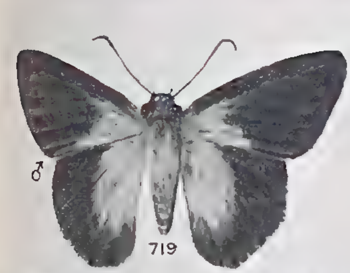

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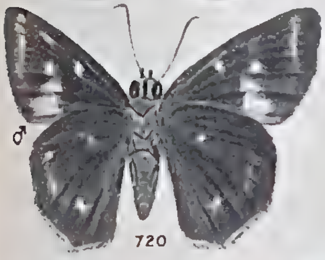

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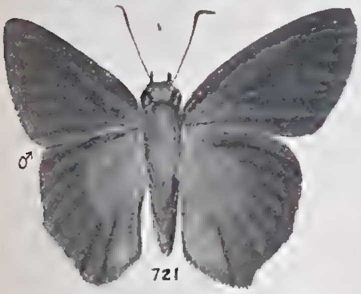

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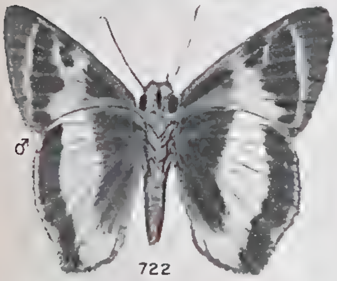

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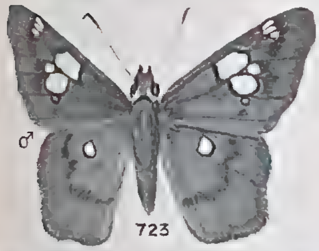

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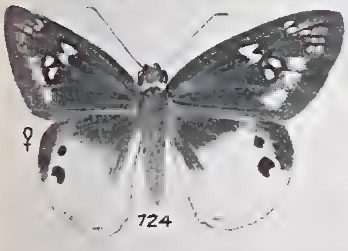

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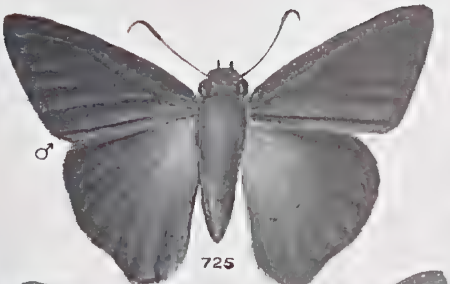

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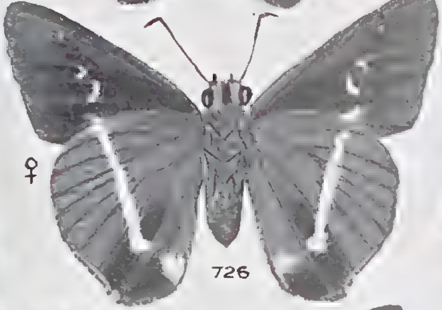

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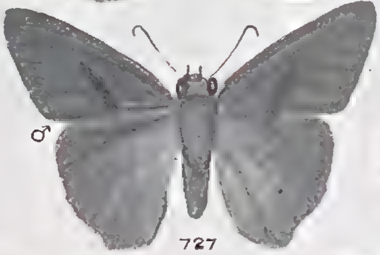

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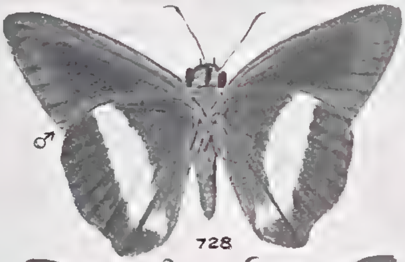

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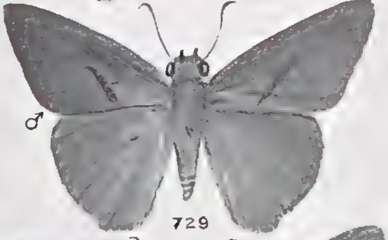

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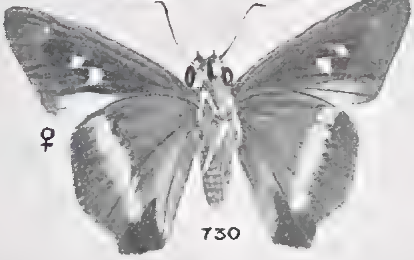

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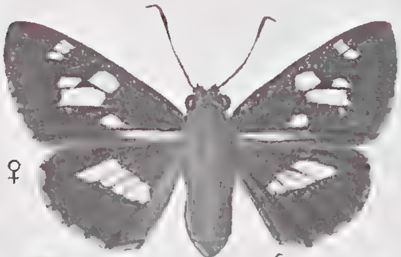

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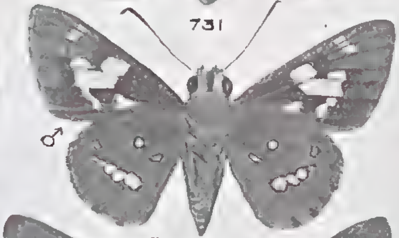

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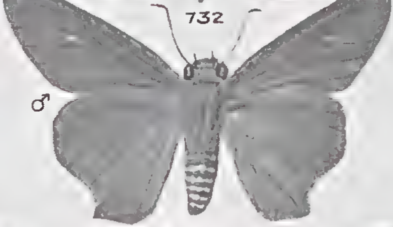

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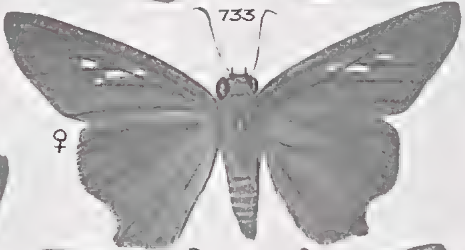

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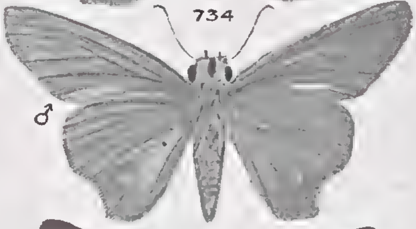

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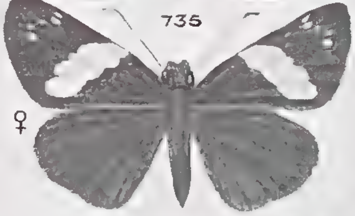

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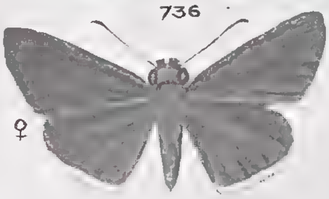

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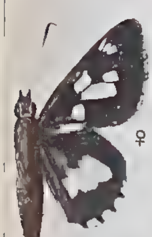

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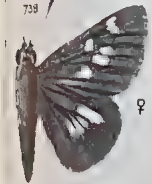

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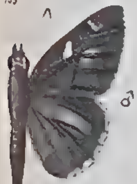

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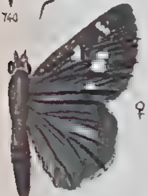

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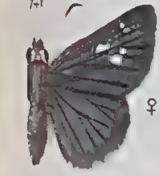

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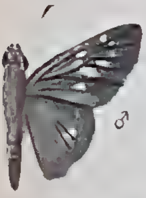

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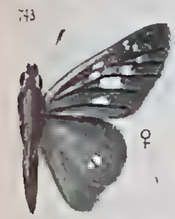

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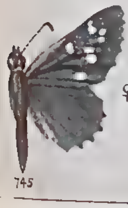

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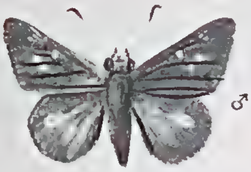

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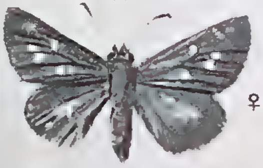

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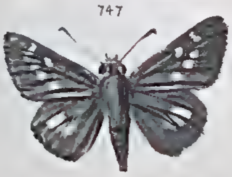

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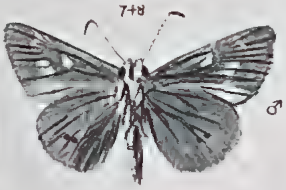

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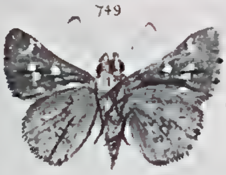

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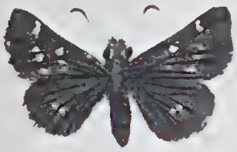

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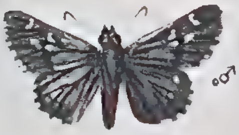

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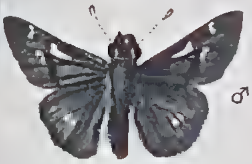

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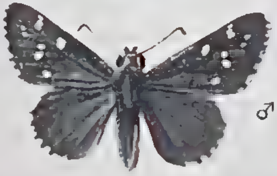

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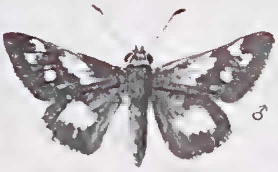

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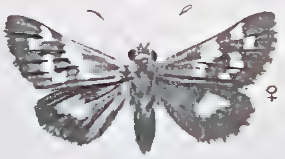

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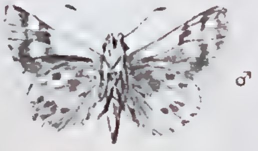

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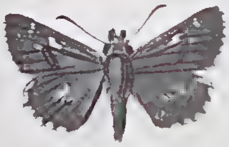

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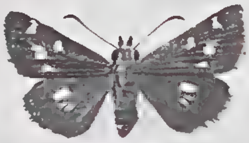

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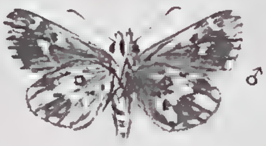

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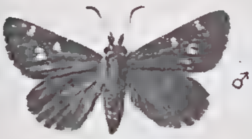

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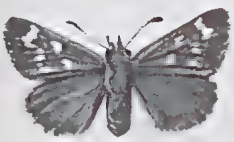

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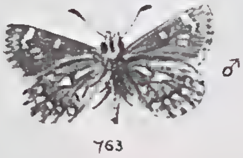

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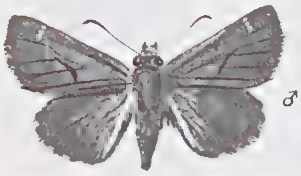

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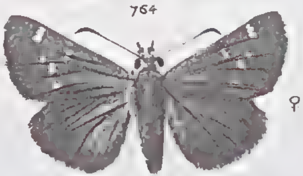

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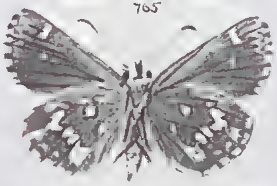

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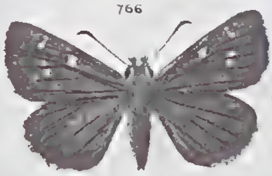

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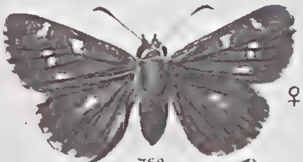

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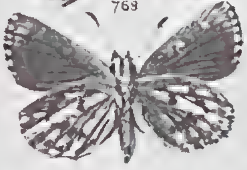

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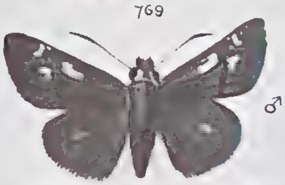

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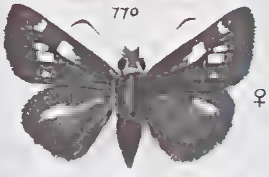

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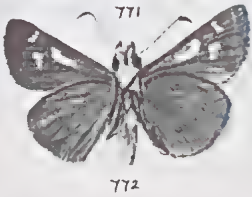

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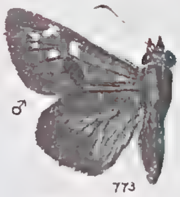

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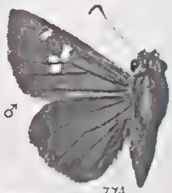

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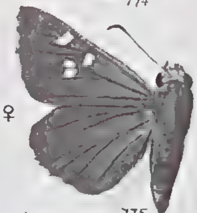

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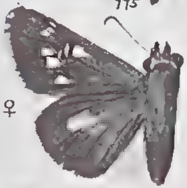

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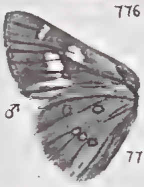

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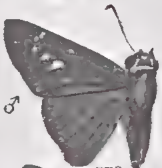

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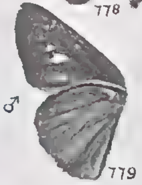

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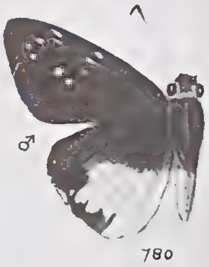

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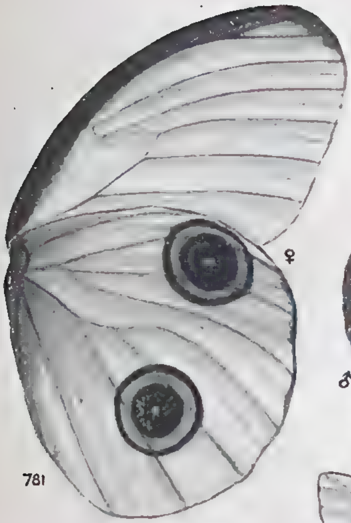
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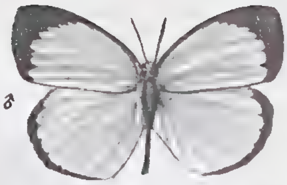
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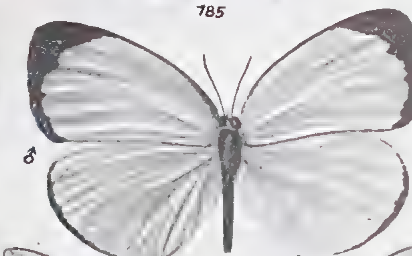
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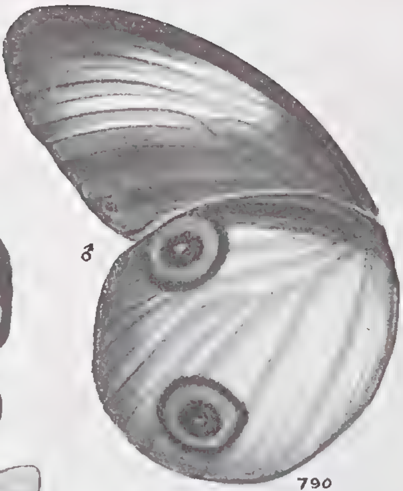
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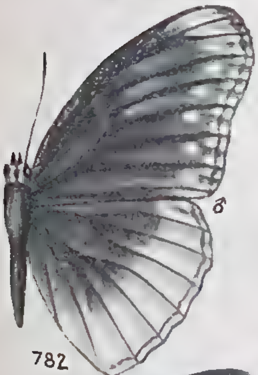
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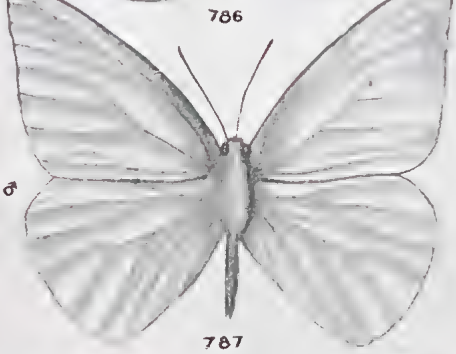
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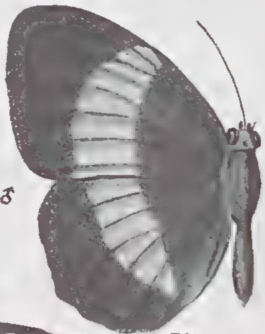
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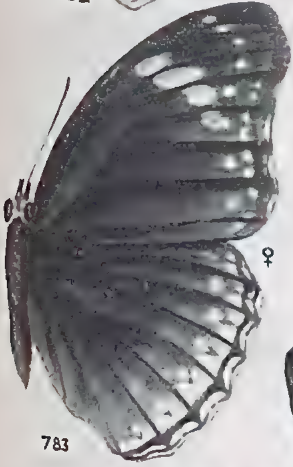
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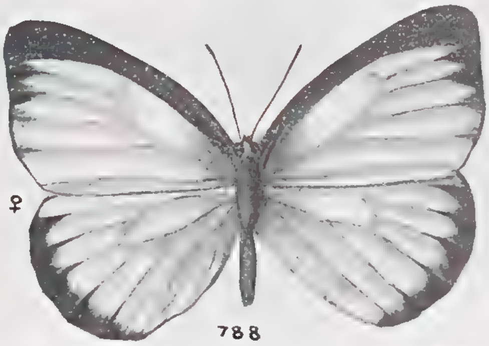
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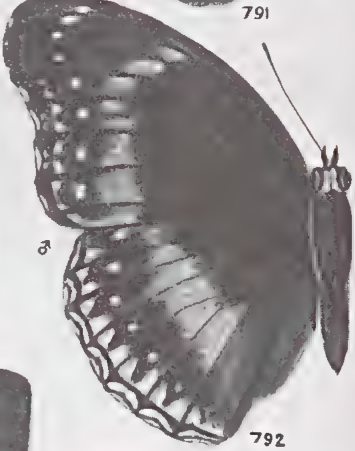
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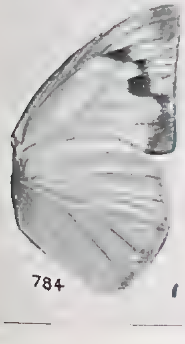
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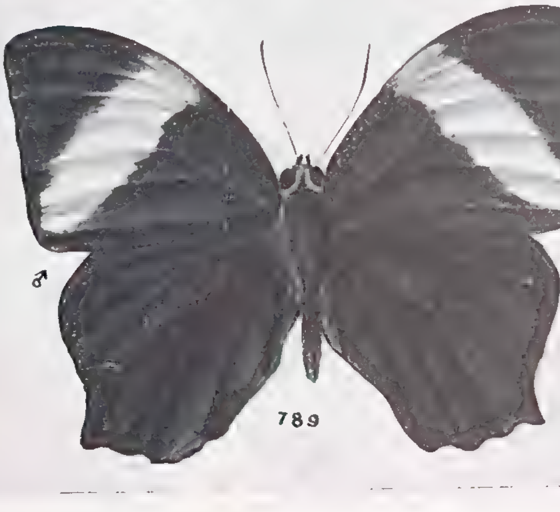
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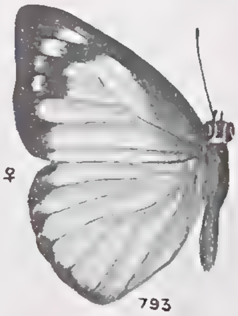
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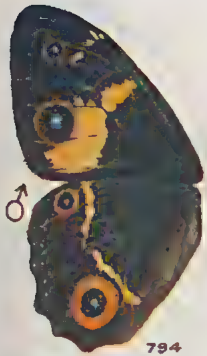
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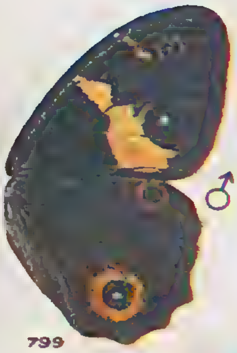
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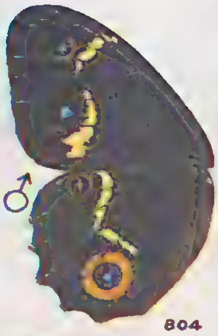
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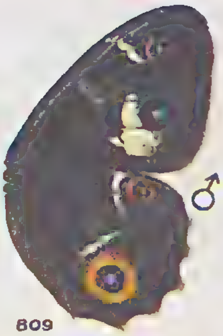
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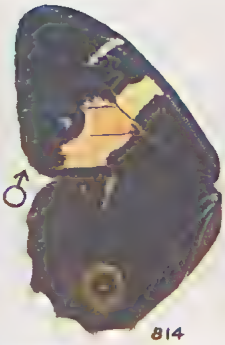
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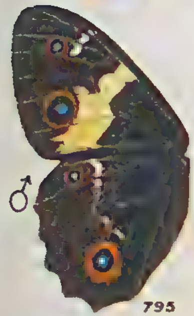
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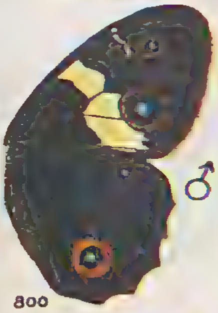
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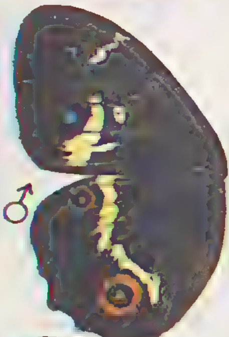
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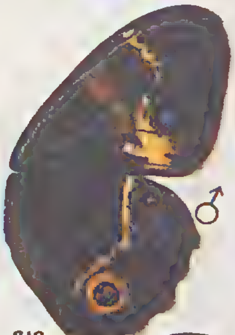
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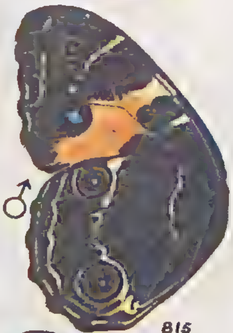
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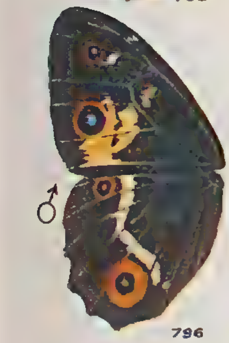
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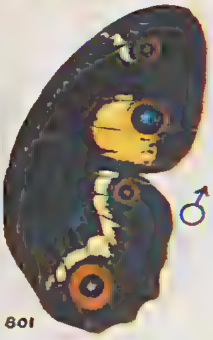
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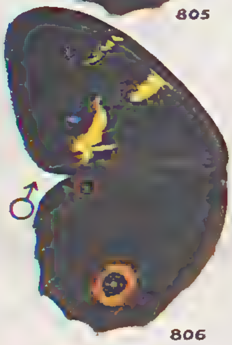
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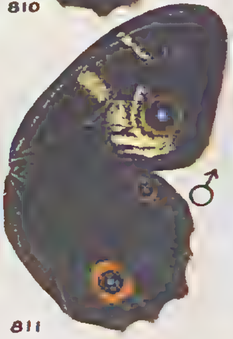
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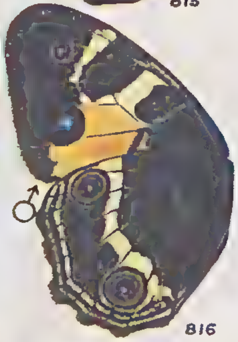
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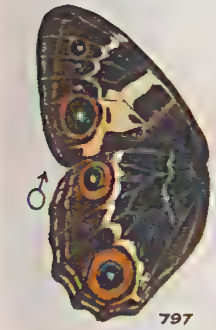
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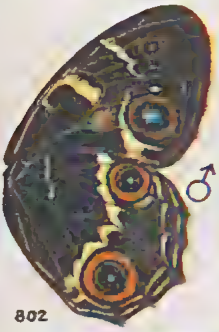
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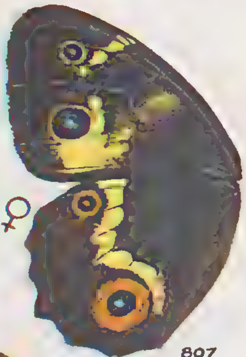
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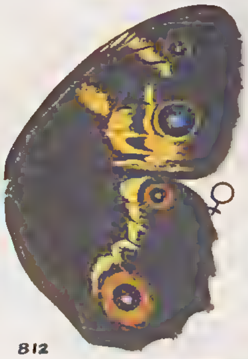
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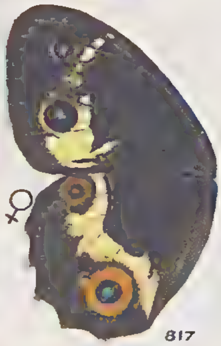
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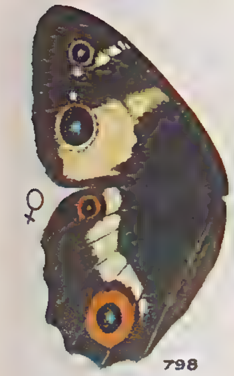
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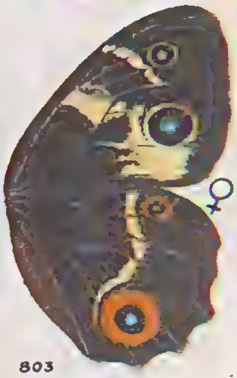
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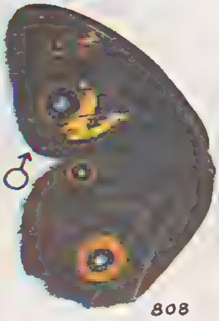
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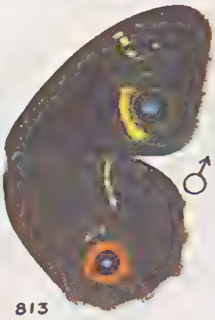
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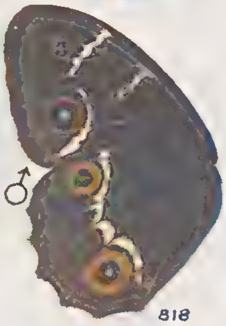
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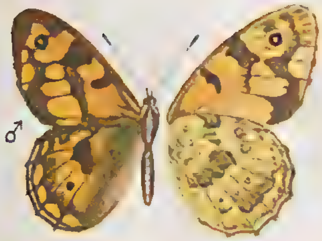

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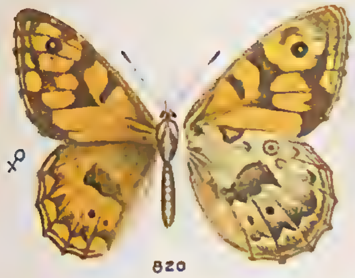

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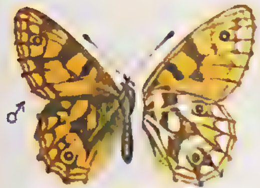

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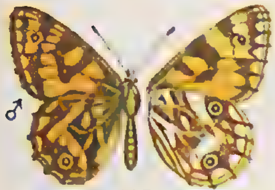

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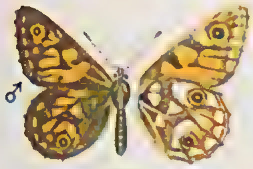

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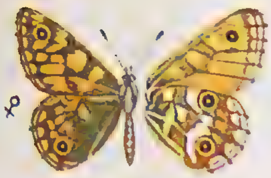

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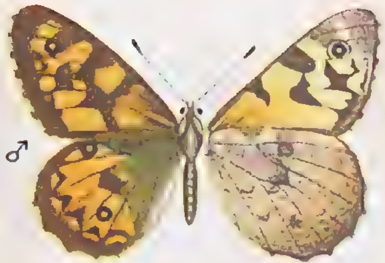

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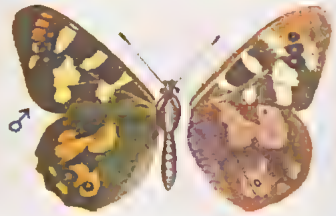

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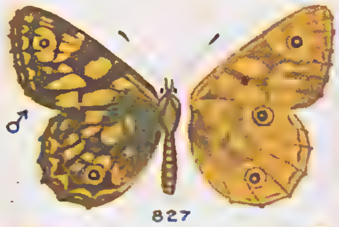

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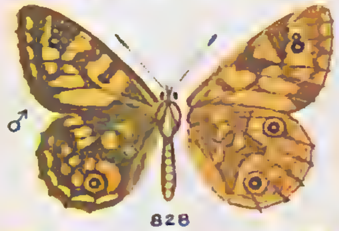

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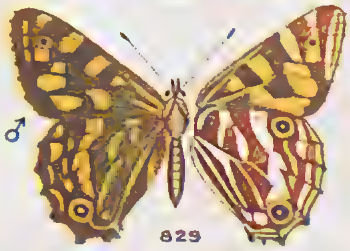

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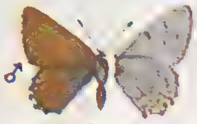

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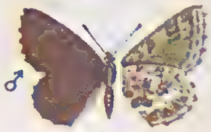

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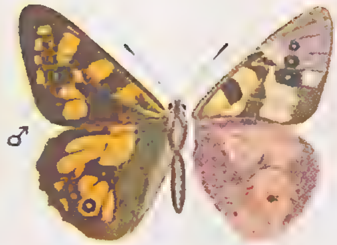

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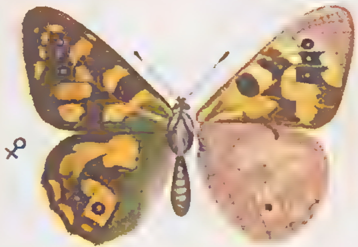

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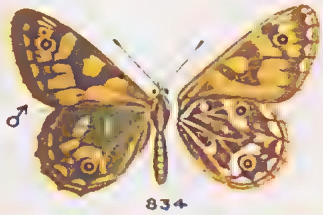

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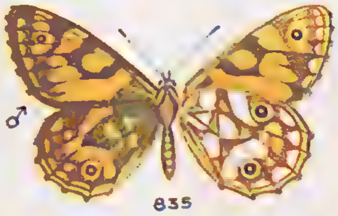

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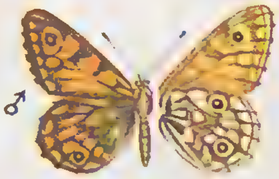

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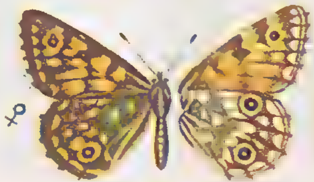

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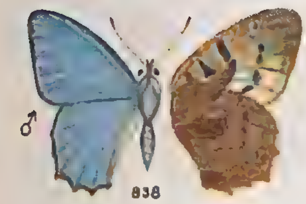

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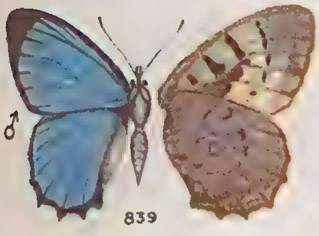

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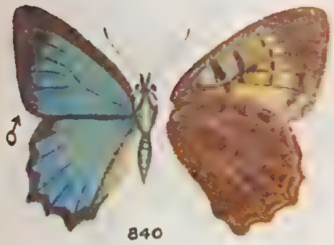

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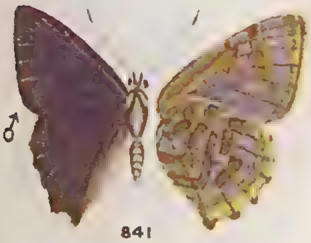

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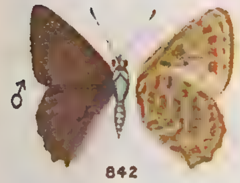

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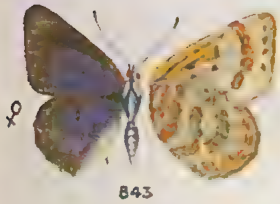

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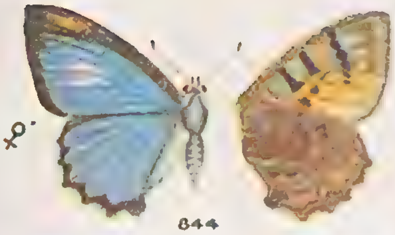

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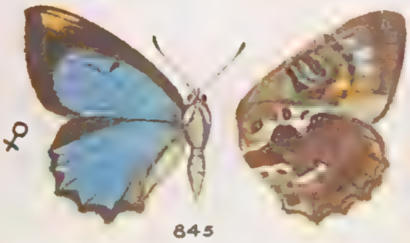

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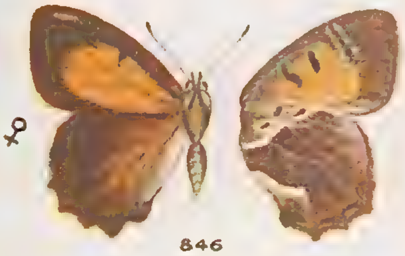

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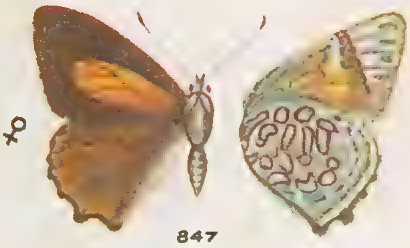

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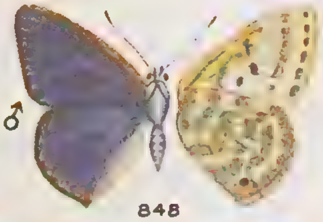

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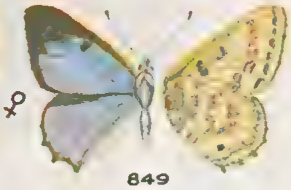

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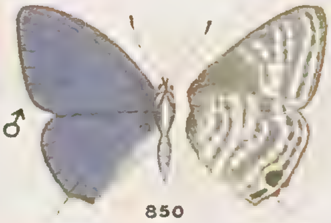

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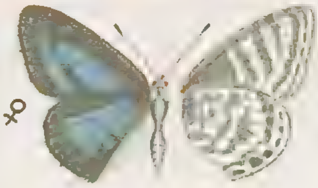

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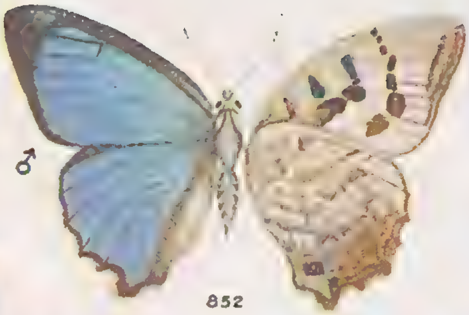

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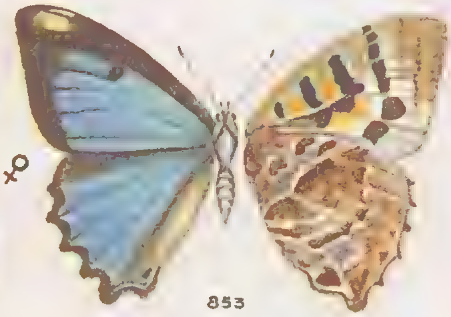

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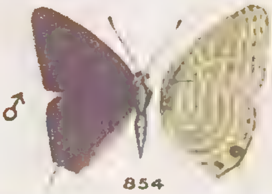

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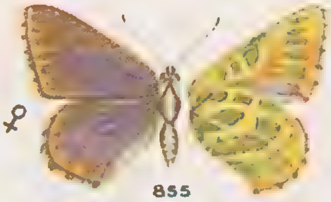

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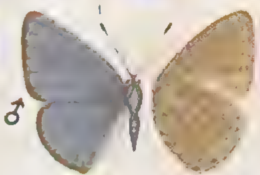

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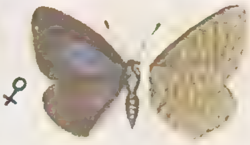

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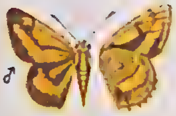

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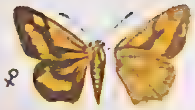

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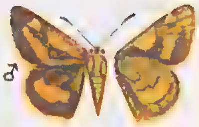

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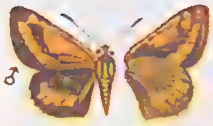

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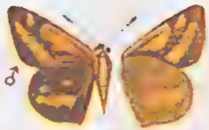

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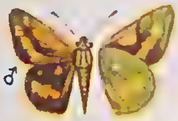

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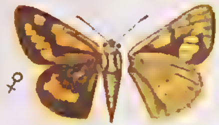

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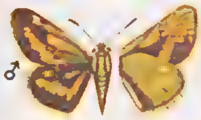

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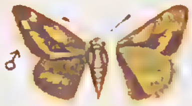

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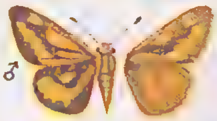

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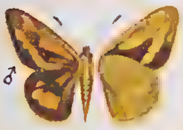

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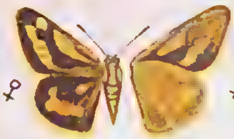

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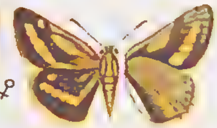

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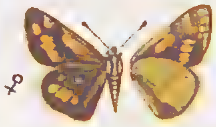

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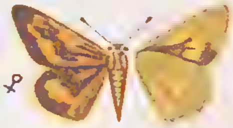

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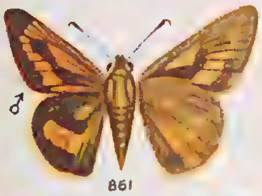

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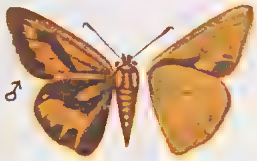

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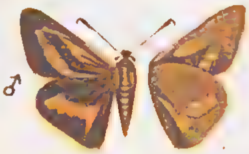

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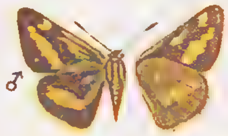

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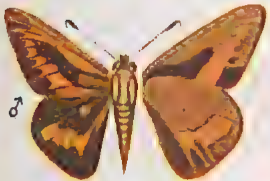

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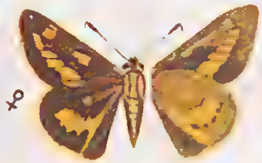

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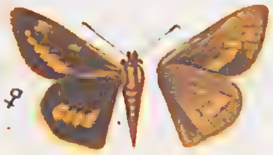

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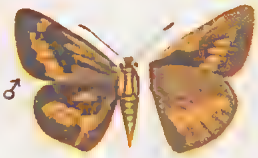

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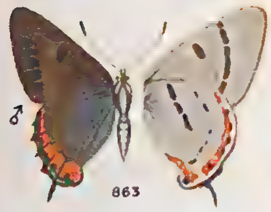

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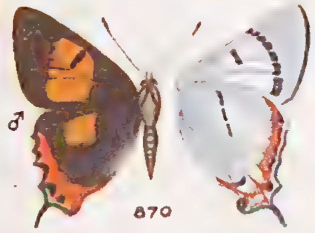

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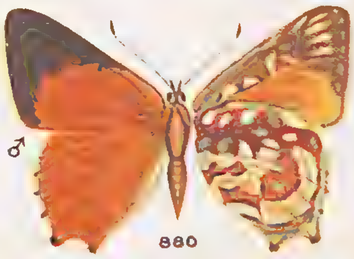

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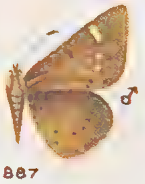

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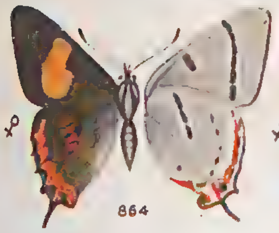

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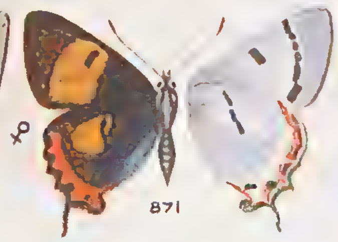

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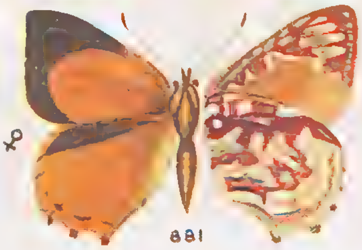

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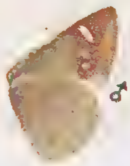

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